THE SOCIOECONOMIC STATUS OF ASIAN BRAZILIANS IN 1980: A COMPARATION OF ASIANS, WHITES AND AFRO-BRAZILIANS

By

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I use the 3% sample data of Metropolitan São Paulo from the 1980 Brazilian Census to examine the socioeconomic standing of Asian Brazilians, relative to whites and Afro-Brazilians in Brazil. Operationally, the socioeconomic standings of the three color groups are measured in terms of fertility level, child mortality level and the life expectancy rate associated with it, educational attainment (school attendance rate of children ages 6-16 and years of school completed by men and women age 18-65), occupational profile and mean monthly income of men and women ages 18-65. The results of these measurements indicate that in 1980 Asian Brazilians lead both whites and Afro-Brazilians in socioeconomic standing, even after controlling for the independent variables. Their success is largely attributable to the favorable social and economic situations they have experienced since their first arrival

in Brazil, the presence of ethnic enclaves and economies, ownership of small business, continued heavy investment in education through several generations, the family characteristics that facilitate stability and capital accumulation, and the cultural values, such as hard work, industriousness, emphasis on education, obligation and loyalty to family and kin group. This shows that Asian immigrants in Brazil have experienced similar, if not more, success in upward social mobility as have Asian immigrants in the United States.

CHAPTER 1
INTRODUCTION

Asian Immigrants in the United States

Asian immigrants in the United States have long attracted the attention of social scientists because it is widely recognized that they have done very well, over time, compared to many other immigrant groups. They are said to have achieved parity with or even surpassed the majority whites in socioeconomic standing (Bell, 1985; Bonacich & Modell, 1980; Chiswick, 1980; Hirschman, 1983; Hirschman & Wong, 1981; Hirschman & Wong, 1984; Hirschman & Wong, 1986; Jiobu, 1976; Jiobu, 1990; Kitano, 1974; Kitano & Daniels, 1988; Montero, 1981; Montero & Tsukashima, 1977; Nee & Sanders, 1985; Nee & Wong, 1985; Petersen, 1971; Rose, 1985; Wong, 1980; Wong, 1982).

Asian Americans have been called a "model minority" (Newsweek, 1982) and "America's super minority" (Ramirez, 1986), and hailed as "America's greatest success story" (Bell, 1985). Indeed, Asian Americans, especially Japanese Americans and Chinese Americans, have achieved great success in terms of labor force participation, income and education. In 1979, 95% of Asian Americans (the six largest groups within Asian Americans which include Chinese, Filipino, Japanese, Asian Indians, Korean and Vietnamese) had a median family income of $23,600, compared to the average of $20,800 for white families (the national average was $19,900); 35% of Asian Americans age 25 and older had graduated from college, compared to 17% of white adults (Gardner, et al., 1985). The 1990 census revealed further

advances in income and education for Asian Americans. Their median family income in 1989 was $41,583 compared with the national average of $35,225, and 38% of Asian Americans had graduated with a bachelor's degree or higher, compared with 20% of the total population (Bureau of the Census, 1993).

However, the Asian success story has been exaggerated to some extent because the statistics on median family income does not reflect the entire picture of the socioeconomic status of Asian Americans. As many researchers have noted, the higher median family income of Asian Americans is mainly due to their larger average family size (3.8 persons for Asian American families vs. 3.2 persons for all U.S. families in 1989), higher proportion of families with three or more workers (19.8% for Asian American vs. 13% for the total population), geographical locations (Asian Americans are highly concentrated in California and New York, where the average income is higher, relative to the rest of the country), and higher educational attainment. In fact, the mean personal income of Asian Americans in 1989 was slightly lower than the national average: Per capita income for Asian Americans in 1989 was $13,806, compared with the national per capita income of $14,143 (Bureau of the Census, 1993). Nonetheless, there is no doubt that compared to many other immigrant groups, most Asian Americans have overcome the disadvantages that immigrant groups typically confront in the United States.

Social scientists have devoted considerable effort to understanding the factors that explain the relative success of Asian immigrants. Some have stressed the role of "middleman minorities" for various Asian groups in the labor market and occupational concentration (Bonacich, 1973; Bonacich and Modell, 1980; Kitano, 1974). Some have emphasized the importance of small business ownership, ethnic economy and ethnic enclaves in their upward

social mobility (Li, 1977; Lyman, 1977; Nee & Sanders, 1985; Takaki 1989). Others have argued that the strength of kinship and family ties, and the emphasis on education, hard work and sacrifice for children are mostly responsible for their success (Kitano, 1969; Newsweek, 1982; Petersen, 1971; Schwartz, 1971).

The first two arguments are structural explanations while the third type is cultural. The structural arguments mainly examine the relationship between the minority in question and the society at large in terms of occupational structure, economic status and the role of ethnic organizations in the economic, social and political arena. Cultural arguments either focus on the cultural characteristics of the minorities themselves or seek similarities between the cultural values of the dominant society and the minorities and to attribute the success of minorities to these cultural traits.

Nee and Wong (1985:282) argued that both the cultural and structural explanations were ahistorical because they "fail to capture the dynamic nature of immigrant groups as they respond to historical situations and changing economic structures." For them, the cultural argument was a form of circular reasoning and failed to include two important variables that were essential for the upward mobility of immigrants and their descendants; 1) "immigrants' willingness to endure hardship for economic gains" and 2) "the socioeconomic background at the time of immigration" (1985:283).

They maintained that the cultural characteristics of Asian Americans reflected the influence of neo-Confucianism, which emphasized "the legitimacy of status attainment through education and membership and obligation to an interdependent family and kinship unit" (1985:284), rather than Protestant values, as suggested by Petersen (1971) and Kitano (1969). Meanwhile, they regarded the socioeconomic background of immigrants at

the time of immigration as crucial for "the creation of opportunities for upward mobility." Without the necessary human capital to generate resources, the cultural characteristics of immigrants would have much smaller impact on their socioeconomic standing. Therefore, both the cultural characteristics and the socioeconomic background of immigrants were essential in understanding their success in the new country.

Nee and Wong (1985:286) also criticized the structural argument for "failing to deal with the changing economic condition of the expanding market economy in North America." They maintained that the socioeconomic attainments of immigrant and ethnic groups are the result of "continuous change and transformations of both cultural attributes and labor market conditions" (1985:287). The formation of household production units, they argued, facilitated the social and economic mobility of Japanese Americans. The profit from the household production units in turn served as the capital for further development of small businesses. Nee and Wong particularly stressed the importance of the family bond in the socioeconomic attainment of Asian Americans:

> Cheap labor generated by household units allowed these ethnic businesses to be competitive in the dominant society; formation of family businesses coincided with the development of an enclave economy, which opened ethnically controlled avenues for socioeconomic mobility, and provided a stable environment for family life and the socialization and education of an upwardly mobile second generation. (1985:287-288)

Nee and Wong (1985) used a "supply-demand" perspective, which treated culture and structure as part of an integrated explanation, for the differential timing of socioeconomic attainment for Chinese and Japanese immigrants in California. They placed the cultural attributes of immigrants

and the socioeconomic background prior to and after immigration on the supply side, and put the structural constraints and opportunity structures created by the development of the capitalist economy on the demand side.

Theories of middleman minorities and of ethnic enclaves are often applied in the literature of Asian Americans. Drawing on earlier works on ethnic group relations, such as Blalock (1967), Bonacich (1973) and Bonacich and Modell (1980) argued that certain minorities in multiethnic societies occupy a middle status between the dominant group and the subordinate groups, acting as buffers between elites and masses. These middleman minorities usually occupy an intermediate niche in the economic system and tend to concentrate in certain occupations, such as traders, moneylenders and shopkeepers. Middleman minorities therefore provide goods and services to both the elites and the masses. Because of their unique social position of belonging nowhere, they tend to develop strong in-group solidarity and form their own separate and distinct community. Two often-cited examples of middleman minorities are Jews in feudal and early modern Europe and Chinese in Southeast Asia (also called overseas Chinese) (Bonacich and Modell, 1980).

Bonacich and Modell (1980) applied the theory of middleman minorities to the experience of Japanese Americans. They argued that Japanese Americans, particularly the *issei*, or the first generation, exhibited many of the traits of a middleman minority; they "formed a highly organized, internally solidary community," were "concentrated in self-employment and nonindustrial family businesses" and "faced severe hostility from the surrounding society" (1980:35).

Like the middleman minority theory, the ethnic enclave theory examines the structural incorporation of immigrants into the host economy.

"Ethnic enclaves are a distinctive economic formation, characterized by the spatial concentration of immigrants who organize a variety of enterprises to serve their own ethnic market and the general population" (Portes and Bach, 1985:203). The presence of immigrants with sufficient capital to create new opportunities for economic growth and an extensive division of labor are two fundamental traits of economic enclaves. Ethnic enclaves also require a large number of immigrants with business skills and a large pool of low-wage labor. The Cubans in Miami and Koreans in Los Angeles are contemporary examples of ethnic enclaves (Portes and Manning, 1986). Some ethnic groups are highly entrepreneurial, possess capital, and therefore develop ethnic economies that consist of many small businesses, some of which interface with the majority economy (Portes and Jensen, 1987). Within this enclave, ethnic workers do not have to compete with the majority workers and are usually not directly subject to discrimination by the dominant group. Therefore, they can climb the socioeconomic ladder relatively free of racial and ethnic discrimination.

This does not mean that everyone is equal in an ethnic enclave. On the contrary, ethnic employers exploit ethnic workers, especially recent arrivals, and make huge profit from cheap labor. On the relationship between the employers and workers in ethnic enclaves, Jiobu (1990:171) stated that "to the extent that workers rely on enclave employment, their income, and by implication their socioeconomic standing, will be suppressed. But on the other hand, suppressing the income of workers raises the income (and socioeconomic standing) of ethnic employers."

The debate on cultural vs. structural explanations for the relative success of Asian Americans continues, but there are important aspects of the issue that have received very little attention. One such aspect is the need for

more comparative research on the fate of Asian immigrants in other countries, such as Brazil, a country that has received a large contingent of Asians (mostly Japanese). In contrast to the vast literature on Afro-Brazilians, the literature, especially recent studies, on the Asian population in Brazil is remarkably small. In this dissertation, I examine whether Asian immigrants have experienced the same socioeconomic success in Brazil as they have in the United States. Specifically, I compare Asian Brazilians to whites and Afro-Brazilians in Brazil in terms of quality of life.

Research Design

Dependent Variables

The data for this study are the 3% sample of Metropolitan São Paulo from the 1980 Brazilian Census. Conceptually, quality of life can be measured by success or failure at various crucial periods of the life course: giving birth, surviving childhood, acquiring an education, finding a job and getting paid. Operationally, the dependent variables in this study are fertility level (mean children ever born to women ages 15-49), child mortality rate and the life expectancy rate associated with it, school attendance rate for children ages 6-16 and educational attainment of men and women ages 18-65, occupational profile of men and women ages 18-65, and mean monthly income of men and women ages 18-65. Taken together, these variables provide us with a measure of the quality of life for each of the three color groups (white, Afro-Brazilian and Asian Brazilians) in Brazil.

Color Groups

The 1980 Brazilian census used four categories for racial classification; *branco, pardo, preto and amarelo,* or white, brown, black and yellow. In this study, I use three color groups (whites, Afro-Brazilians and Asian Brazilians), instead of the four in the 1980 census. In other words, I have combined the census categories of black (preto) and brown (pardo) into a single category, called "Afro-Brazilians," and have replaced "yellow" (*amarelo*) with the term "Asian Brazilians" or simply "Asians."

My decision of combining the categories of brown and black into a single category is based on two things; the focus of this study and the findings of a number of studies on racial inequalities in Brazil (Hasenbalg, 1985; Hasenbalg and Huntington, 1982; Lovell, 1989; Silva, 1978; Silva, 1985; Wood, 1990; Wood and Carvalho, 1988; Wood and Lovell, 1989; Wood and Lovell, 1992). First, since the focus of this study is Asian Brazilians, I could have compared them to the rest of the population as a whole or to all of the racial categories used in the 1980 census. In my view, though, the position of Asian Brazilians in Brazilian society is most clearly shown by comparing them to whites and Afro-Brazilians since we know from the literature that there are significant differences among these groups. Second, the above studies found that although there are differences between blacks and mulattos in socioeconomic standing, they are much closer to one another than to whites and there are substantial differences between whites and nonwhites. In other words, there is a major dividing line between whites and non-whites. Thus, to compare Asians to the rest of the population would ignore the social reality of the race relations in Brazil. I discuss the debate on the racial categories in Brazil and the Brazilian censuses in Appendix A.

Independent Variables

In addition to color group, the most important independent variables in this study are age, sex, residence, educational level, and income level. In most chapters, I treat age as an ordinal variable consisting of three categories (18-25, 26-39 and 40-65 years old). This eliminates the general effect of age on the dependent variables. In regression analyses, age is treated as an interval variable. Residence is a dichotomous variable: urban or rural.

Educational attainment is measured by years of schooling completed. In descriptive analyses, I generally treat this as an ordinal variables consisting of five levels: 1) no schooling at all, 2) one to four years of schooling, 3) five to eight years of schooling, 4) nine to eleven years of schooling and 5) twelve or more years of schooling. However, years of schooling is treated as an interval variable in regression analyses.

Mean monthly income refers to the sum of either household or individual income from different sources, such as occupation, income in kind, retirement (social security), rent, gifts, capital and others, during the period of twelve months preceding the census. Based on the minimum wage in 1980 (one minimum wage = 4,150 cruzeiros), mean monthly income is classified into four levels in descriptive analyses: 1) up to one minimum wage (zero to 4,150 cruzeiros), 2) between one and two minimum wages (4,151-8,300 cruzeiros), 3) between two and three minimum wages (8,301-12,450 cruzeiros), 4) above three minimum wages (above 12,450 cruzeiros). However, in regression analyses mean monthly income is treated as an interval variable, with one minimum wage constituting one unit.

Organizations of the Chapters

Chapter 2 provides an historical overview of Japanese migrations to Brazil and of the Japanese experience in Brazil from their arrival at the turn of the century to the late 1950s. Chapter 3 starts with a review of fertility theories and of racial/ethnic differentials in fertility. I then examine the fertility differences by color, age, educational level, income level and residence before comparing the fertility differentials among Asians, whites and Afro-Brazilians, controlling for the other variables. Finally, I conduct a multivariate regression analysis to examine the association of fertility and the other variables.

In Chapter 4, I discuss major determinants of mortality and racial/ethnic differences in mortality in multiethnic societies. Then, I describe some key socioeconomic indicators of Asian, white and Afro-Brazilian women and use indirect measures to calculate child mortality rate for the three color groups. On the basis of the mortality level for each group, I calculate the life expectancy rate for each of the three groups and discuss the implications of these rates. Finally, I examine the association between the major socioeconomic indicators and child mortality, using the Tobit regression procedure.

Chapter 5 has three sections. The first section compares Asian, white and Afro-Brazilian children ages 6-16 in terms of in-school rate by age, sex, residence, parents' educational level and income level. I then use logistic regression to measure the effects of these variables on racial differences in school attendance rate. The second section describes differences in educational attainment of men ages 18-65 by color, age, residence and mean monthly income and the effects of these independent variables on the racial

differences in educational attainment. In the third section, I repeat the same analysis for the measurement of educational attainment of women ages 18-65.

In Chapter 6, I describe occupational profiles of men and women ages 18-65 separately by color, age, residence, educational level and income level and the effects of these variables on racial differences in occupational distribution.

Chapter 7 describes mean monthly income of men and women separately by age, residence, occupation and educational level. I examine the racial differences in mean income, controlling for the other variables.

In Chapter 8, the concluding chapter, I summarize the main findings of the study and discuss the implications of my findings in the light of relevant literature on the experience of Asian immigrants in the United States.

Asian Immigrants in Brazil

Amarelo has been used as one of the four racial categories in the Brazilian Censuses since 1940, and there is little ambiguity as to whom it refers. *Amarelo* is designated for people with yellow skin color, who are either immigrants from Asia or their descendants. Unlike other racial categories, there has been very little movement in and out of *amarelo*. This is probably because of Asians' distinct physical features and their lack of intermarriage with other racial groups. Though they comprise less than one percent of the total population in Brazil, the *amarelos* are a very stable group in terms of racial classification.

Although there are no accurate data on the composition of *amarela* (people of Asian origin in Brazil) by national/ethnic origin, both historical

records and recent estimates indicate that most of them are of Japanese descent (Dwyer and Lovell, 1990; Suzuki, 1981; Tsuchida, 1978). For instance, of 242,320 *amarelos* censused in 1940, 99% were Japanese and only 1% were Chinese (Tsuchida, 1978). At the time, Japanese and Chinese were the only two groups to which the category of *amarelo* was applied.

By 1980, not much had changed. I examined the data on the place of birth and national origin of Asians (*amarelo*) aged 15-65, using the 3% sample data of São Paulo from the 1980 Brazilian Census. The overwhelming majority of Asians in Brazil are still either Japanese immigrants or their descendants. The data show that 67.7% of Asians in the sample are Brazilians by birth, 6.8% are naturalized Brazilians and 25.6% are foreign nationals. Of those who are Brazilian citizens by birth, 92.1% were born in São Paulo, followed by 5.6% from Parana and 2.2% from other places. Meanwhile, of Asians who were born in foreign countries, 88.1% are from Japan, followed by 4.7% from Korea, 4.5% from China and the remaining 2.6% from other countries (see Table 1.1). Therefore, we can say with certainty that *amarelos*, or "yellow people," are predominantly of Japanese descent, and the Japanese experience in São Paulo constitutes the major part of Asian experience in Brazil.

The percent of *amarelos* in the Brazilian population was steady at 0.6% during the 1940s and 1950s. It increased slightly to 0.7% from the 1960s to the 1980s (see Table 1.2). According to the 1980 Brazilian census, the total population of *amarelos* is 673,000. Throughout this study, I will refer to *amarelos* as Asian-Brazilians or simply Asians, which, I think, is a more appropriate term. Asian-Brazilians are highly concentrated in the state of São Paulo. The historical reasons for this are described in Chapter 2. In fact, in 1980 more than 75% of the total Asian population of Brazil resided in São

Paulo and comprised 2.3% of the state's total population (FIBGE 1981). That is why I chose the sample data of São Paulo to study Asian Brazilians, and their relationships to whites and Afro-Brazilians.

Table 1.1
Distribution of *Amarelos* Ages 15-65 by Place of Birth and National Origin, Metropolitan São Paulo, Brazil (1980)

			National Origin (%)		
Place of Birth	%	N	Brazilian	Naturalized	Foreign
Brazil					
São Paulo	92.1	3,492	92.1	------	------
Parana	5.6	214	5.6	------	------
Other	2.2	85	2.2	------	------
Total	100.0	3,791	100.0	------	------
Foreign					
Japan	88.1	1,603	------	19.3	80.7
Korea	4.7	86	------	14.0	86.0
China	4.5	82	------	54.9	45.1
Other	2.6	48	------	29.2	70.8
Total	100.0	1,819	------	20.9	79.1
Total	100.0	5,610	67.6	6.8	25.6

Source: Weighted 3% sample data of Metropolitan Sao Paulo, 1980 Brazilian Census.

Table 1.2
Racial Composition of Brazil's Population, 1940-1980

Race	1940		1950		1960		1980	
	N	%	N	%	N	%	N	%
White	26,172	63.5	32,028	61.7	42,838	61.0	64,540	54.2
Brown	8,744	21.2	13,786	26.5	20.706	29.5	46,233	38.8
Black	6,036	14.6	5,692	11.0	6,117	8.7	7,047	5.9
Yellow	242	0.6	329	0.6	483	0.7	673	0.7
Missing	42	0.1	108	0.2	47	0.1	517	0.4
Total	41,236	100.0	51,944	100.0	70,191	100.0	119,011	100.0

Figures are in thousands.
Source: Demographic Censuses 1940, 1950, 1960, 1980

CHAPTER 2
HISTORICAL OVERVIEW OF THE JAPANESE EXPERIENCE IN BRAZIL

Historical Background for the Japanese Migration to Brazil

The overseas migration of Japanese did not start until the Meiji Restoration of 1868. After that, industrialization and urbanization during the Meiji Era (1868-1912) led to massive overseas migration in the late nineteenth and early twentieth centuries. Urbanization encroached on agricultural families and wound up depriving them of access to their land (Ito-Adler, 1987). Rapid population growth in the rural areas, which exceeded the industrial growth, also contributed to the massive migration of farmers both to urban areas in Japan and overseas. Some analysts (Tsuchida, 1978; Reichl, 1988) argued that the Japanese government considered overseas migration as a viable option for the increasing problem of surplus rural population.

The first important destinations outside Asia of Japanese emigrants were Australia (1883), Hawaii (1885) and Canada (1891). Reichl (1988:22) wrote, "only those Anglo-Saxon countries were sanctioned for emigration prior to the Russo-Japanese War in 1905 because they 'offered better economic opportunities than other countries of immigration' (Tsuchida, 1978:27)."

Japanese emigration to South America did not start until 1903, when they first came to Peru, Mexico and Argentina. Japanese immigration to Brazil began late in 1908, after several years of negotiation between the state of

São Paulo and a number of private Japanese emigration companies. However, Brazil soon became the most important destination for Japanese immigrants: they became the second largest group (16.8%) of all immigrant groups to Brazil during the period from 1924-1941, only after the Portuguese immigrants (33.1%). In fact, by 1938 the Japanese population in Brazil grew to 95,116, which was the second largest overseas Japanese population, after that in Manchuria (233,842), then a colony of Japan (Normano and Gerbi, 1943). For the period 1950-1955, the Japanese population in Brazil was estimated at 373,000, making Brazil the country that had the largest Japanese population outside of Japan, followed by the United States (326,376) (Fujii and Smith, 1959). By 1968, the total number of the Japanese and their descendants in Brazil was estimated at more than 615,000, which was 50% of all Japanese immigrants and their descendants residing in foreign countries. By then, the United States was a distant second (Sims, 1972).

The serious labor shortage and underpopulation in Brazil in the late nineteenth and early twentieth centuries were other major factors in the large-scale emigration of Japanese to Brazil. Smith (1972:118) cited two major motivating forces of the Brazilian government for seeking immigrants. The first was "the creation of a small-farming class in the population." The second was "the ensuring of what Brazil's upper classes considered an adequate and cheap labor supply to perform the manual work on the coffee, cotton, and sugar plantations of the nation," after the abolition of slavery in 1888.

The Brazilian government preferred Europeans to Asiatic people, therefore European immigrants (mainly from Italy, Portugal and Germany) composed most of the agricultural laborers who came to Brazil during the last decade of the nineteenth century and the first two decades of the twentieth

century. However, several events in Europe and Japan at the turn of the century had major impacts on the immigration wave to Brazil.

In 1902 the Italian government, in response to reports of mistreatment of Italian *colonos* on plantations in São Paulo, temporarily banned the subsidized migration of Italian laborers to Brazil. Although Italian laborers continued to come in small numbers following the ban, they were far too few to satisfy the growing demand for rural labor on the plantations of São Paulo (Holloway, 1980).

In 1888, Australia prohibited Japanese immigration. There was also growing anti-Japanese sentiment in North America and the "Gentlemen's Agreement" between the United States and Japan in 1907 limited immigration from Japan severely (Reichl, 1988). Thus, a severe labor shortage in Brazil, lack of access to Australia and the U.S., and Japan's increasingly overcrowded rural areas created a perfect climate for Japanese migration to Brazil. As Normano and Gerbi (1943:45) described it, "Japan's land hunger coincided with Brazil's population hunger."

Japanese Immigration to Brazil

Japanese migration to Brazil can be separated into four time periods, according to the volume and nature of migration, and characteristics of immigrants: 1) 1908-1923, 2) 1924-1941, 3) 1952-1958, 4) 1959-late 1960s.

The Period 1908-1923

The beginning period from 1908-1923 was characterized by the partial subsidy provided by the state of São Paulo to the immigrants to help cover

their maritime passage. On the other hand, private Japanese companies were mostly responsible for the emigration business and the Japanese government primarily played a coordinating role for most of the time. The volume of immigrants during this period was relatively small except the years 1917-1919. The majority of immigrants were farmers in family units, as was required by the Brazilian government.

The first group of Japanese immigrants, consisting of 781 individuals (158 families), arrived by ship in the port of Santos, São Paulo, in 1908. They came as *colonos* (contract laborers) under a contract between Japan and the state of São Paulo. During the next fifteen years, Japanese immigrants continued to come, though in small numbers. The total number of Japanese immigrants from 1908 to 1923 was 32,266, constituting only 2.5% of all the immigrants to Brazil for the time period (Fujii and Smith, 1959). However, the period 1917-1919 was the peak for the influx of Japanese immigrants, representing 12.9%, 28.3% and 8.4%, respectively, of all the immigrants to Brazil for the three years. This dramatic increase in the number of immigrants to Brazil was mostly due to the establishment of the Kaigai Kogyo Kabushik (Overseas Development Company), or K.K.K. Compared to other groups, the number of Japanese immigrants was relatively small, but their successful beginning was very important to the future of Japanese emigration to Brazil.

The Period 1924-1941

This period witnessed a steady increase in the number of immigrants because of Japan's increased governmental financial support and involvement in overseas emigration. This period also marked a shift of

Japanese emigration to Portuguese-speaking America, mainly Brazil, and away from the earlier destinations in North America. Both Normano and Gerbi (1943) and Fujii and Smith (1959) noted that in 1924, the Emigration Council, headed by Minister of Foreign Affairs Shidehara, sent a new mission to South America to explore possible destinations for large-scale emigration. As a result, the Japanese government decided to concentrate her emigration effort on Brazil and soon established the Overseas Development Company, a centralized and highly rationalized management of emigration to Brazil. The Japanese government also provided subsidies to the company for its emigration efforts.

Meanwhile, in 1923 the state of São Paulo stopped the policy of giving subsidies to immigrants from Japan. The proportion of Japanese immigrants (of all immigrants to Brazil) increased dramatically from 2.8% in 1924 to 53.2% in 1933, and then steadily decreased to 5.6 % in 1941, when World War II broke out. This slowdown in the pace of Japanese immigration was also caused by the Immigration Legislation of 1934 in Brazil, which aimed to restrict the entry of immigrants annually to two percent of the total entries of the previous fifty years. However, the percentage of Japanese among all immigrants during this period was 16.8%, much higher than the 2.5% in the previous period, due to the decline of European immigrants. The total number of Japanese immigrants to Brazil during the 33 years from 1908 to 1941 was estimated at 190,000 (Fujii and Smith, 1959).

The Period 1952-1958

During the ten years from 1942 to 1952, Japanese immigration to Brazil virtually stopped mainly because anti-Japanese sentiment was very high in

Brazil (due to Japan's involvement in the war) and also because Brazil adopted a quota system to restrict all foreign immigrants. After 1952, Japanese immigration to Brazil resumed, although at a much lower rate, until the late 1960s. It is worth noting that during the four years from 1953 to 1956, Japanese immigration sped up rapidly and the Amazon region received a larger proportion of the total of approximately 14,000 immigrants. The annual proportion of Japanese immigrants of all the immigrants rose steadily from 2.4% in 1953 to a postwar high of 11.0% in 1956.

In 1958, an important census was conducted by a special commission of Japanese immigrants with financial support from the Japanese colony in Brazil, the Brazilian government, the Japanese government, the Population Council of New York and various private enterprises. In commemoration of the fiftieth anniversary of Japanese immigration to Brazil, the census provided valuable information on the Japanese immigrants and their descendants. The census organizers planned to cover "information not only on the present situation of immigrants and their descendants, but on the immigrants' background in Japan, their initial conditions in Brazil, and the changes they had undergone in the 50 year period" (Suzuki, 1965:117). The project was, in fact, a monumental work on various aspects of Japanese immigrants and their descendants in Brazil.

According to the 1958 Japanese self-census, there were a total of 429,413 Japanese, of whom 32.3%, were immigrants and 67.7%, were their descendants. Meanwhile, 44.9% of the Japanese resided in urban areas and 55.1% lived in rural areas. Proportionally, slightly fewer immigrants (42.9%) resided in urban areas and slightly more immigrants (57.1%) lived in rural areas. In contrast, 45.9% of the descendants lived in urban and 54.1% of them resided in rural areas.

The Period from 1959 to the Late 1960s

No statistics are available on the number of Japanese immigrants to Brazil during the period from 1958 to the late 1960s, when large-scale immigration from Japan to Brazil virtually stopped. Nor is there any consensus among researchers on the actual number of immigrants for this period. Sims (1972) reported one interesting feature of the Japanese migration to Brazil during this period: the Brazilian government authorized two Japanese-Brazilians to import immigrants from Japan to certain areas in Brazil and set them certain quotas as well. For example, "the late Mr. Yasutaro Matsubara was authorized to settle 4,000 Japanese families in central Brazil (southern Brazil was approved later) and Mr. Kotaro Tsuji was authorized to settle 5,000 Japanese families in the Amazon region" (Sims, 1972:246). These quotas remained effective until 1966, when the "Japanese-Brazilian Joint Committee" was established and the quotas were abolished. Japanese agencies, governmental and private, continued to provide subsidies to immigrants, especially those bound for Brazil during this period. Suzuki (1981) estimated the total influx for the period from 1952 to the late 1960s at 50,000, while Smith (1979) estimated it at 60,000.

All tolled, during the 50 years from 1908 to 1958, about 240,000 Japanese migrated to Brazil and the majority of them settled in the state of São Paulo (Fujii and Smith, 1959; Suzuki, 1981). The 1950 Brazilian census reported that the total *amarelo* population was 329,082, and 84% of them resided in the state of São Paulo. The 1958 census of the Japanese community "reported that there were about 430,000 persons of Japanese origin in Brazil, 94% of whom resided in the southern part of Brazil, principally in the states of São Paulo and Parana" (Makabe, 1981:790).

Social Characteristics and Social Mobility of the Japanese Immigrants

Japanese immigrants were brought to Brazil primarily as farm laborers. As a result, the majority of them were at the bottom of the social hierarchy when they started their new lives in the new country. Here I will focus on the initial social status, as marked primarily by their occupations, of the Japanese immigrants and the changes in the distributions of industries and occupations for them during their first fifty years in Brazil. Then I will review their initial educational status and how that changed through the years. I will also review some demographic characteristics of the Japanese immigrants that are closely associated with their social mobility.

Occupational Distribution and Mobility

The occupational distribution of immigrants to Brazil first and foremost reflected the Brazilian immigration policy at the time, i.e., the creation of a small-farming class and the provision of a supply of cheap labor for plantation owners.

During the prewar period from 1908 to 1941, 98.8% of the Japanese immigrants to Brazil were classified as farmers, whereas only 59.6% of all immigrants to Brazil were farmers. The proportions of farmers among the larger immigrant groups are 78.6% Spaniards, 49.0% Italians and 47.7% Portuguese (Fujii and Smith, 1959). During the postwar period from 1954 to 1956, the percentage of farmers among Japanese immigrants dropped to about 86% from 98.8% in the previous period. However, it was still amazingly high, when compared to the farmer percentage of 15.9% for all immigrants during that time period (Fujii and Smith, 1959).

Suzuki (1981) reported that 94% of all family heads started as farmers, 78% of whom were at the lowest status as *colonos* primarily on coffee plantations (90%). However, in 1958, the proportion of farmers among the Japanese immigrants dropped to about 61% and the proportion of *colonos* dropped to only 2% of the total farmers. The majority of the former *colonos* went to large urban centers to work as craftsmen and unskilled laborers.

The 1950 Brazilian Census provided the first systematic information on the distribution of industry by racial group. Smith (1972) included a very detailed table on the distribution of industry for males 10 years of age and over by color, based on the 1950 census data. Let me briefly summarize the industry distribution of the *amarelos* and the standing of this group relative to the other races described in Smith (1972).

The 1950 census included eleven categories of industries, but the distribution of industry for the *amarelos* was highly concentrated in the following four categories: agriculture (which included forestry and fishing) (69.0%), service (10.2%), wholesale/retail trade (10.1%) and manufacturing (which included construction and processing) (6.0%). The proportions for the remaining industries were, in descending order: transportation (which included communication and storage) (2.3%), finance (which included insurance and real estate) (0.9%), liberal professions (0.6%), extractive industries (0.5%), and social activities (0.4). The total number of people who were engaged in "public administration, legislation and justice" and "national defense and public security" was so small (90 and 138 respectively) that they were omitted in the percentages for the original tabulation. The percentage of *amarelos* in wholesale and service industries are the highest among the four color groups, and the percentage of *amarelos* in agriculture in about the same as the that of Negroes (see Table 2.1).

Table 2.1
Industry Distribution of Brazilian Males Aged 10 and Over by Color, 1950

Industry	Total (%)	White	Negroes	Yellow	Pardos
Agriculture	64.6	60.6	70.0	69.9	72.3
Extractive	3.2	2.1	3.9	0.5	5.6
Manufacturing	13.0	14.5	13.4	6.0	9.5
Wholesale	6.2	7.9	2.4	10.1	3.5
Finance	0.7	1.1	0.1	0.9	0.2
Service	5.3	6.0	4.0	10.2	3.9
Transportation	4.7	5.5	4.7	2.3	3.8
Liberal Profession	0.5	0.7	0.04	0.6	0.09
Social Activities	1.4	1.7	1.1	0.4	0.9
Public Ad.	1.6	2.0	0.9	-----	0.9
National Defense	1.8	2.0	1.2	-----	1.4
All Industries	100.0	100.0	100.0	100.0	100.0

Source: Table XI in Smith, 1972, pp. 94-95.

We can also look at the proportions of employers, employees, self-employed workers, and family workers by race and see the differences among racial groups. Table 2.2 illustrates the proportions of different employment statuses by color for all industries and agriculture, the most important industry in 1950. In both all industries and agriculture, the *amarelos*, compared to the other groups, have the highest proportions of employers (11.8% and 10.8% respectively) and the highest proportions of family workers (29.6% and 38.5% respectively). Expectedly, they have the lowest proportion of employees (23.7% in all industries and 15.4% in agriculture) among the four groups. Thus Asians were overrepresented proportionally in the ownership of businesses, and they were more likely to work as family units than the other groups.

Table 2.2
Employment Status of Brazilian Males Aged 10 and Over
for All Industries and Agriculture by Color, 1950

Industry	Total(%)	White	Negroes	Yellow	Pardos
All Industries					
Employers	4.3	5.8	1.1	11.8	2.0
Employees	46.7	46.3	58.1	23.7	36.3
Own Account Workers	32.0	31.0	27.3	34.9	36.3
Family Workers	17.0	16.9	13.5	29.6	18.5
Total	100.0	100.0	100.0	100.0	100.0
Agriculture					
Employers	3.4	4.5	1.2	10.8	2.0
Employees	34.5	31.9	48.3	15.4	34.2
Own Account Workers	37.4	37.4	32.0	35.3	39.8
Family Workers	24.7	26.2	18.5	38.5	24.0
Total	100.0	100.0	100.0	100.0	100.0

Source: Table XI in Smith, 1972, Pp. 94-95.

The 1958 Japanese self-census provided valuable information on many aspects of their lives as a social group. Tables 2.3 and 2.4 are calculated and abbreviated from Table 7 in Suzuki (1965) to give more focused analysis on the occupational distribution of the Japanese immigrants and their descendants in 1958. Table 2.3 shows that the proportions of farmers among men and women in the labor force for the total population are approximately the same, 57.6% for men and 57.7% for women. Nevertheless, there are noticeable differences between the immigrants and descendants and also between the two sexes for the immigrants. The proportion of farmers for the male immigrants is 60.3%, while that for the male descendants is only 54.0%. The difference in the proportion of farmers by sex for the immigrants is equally pronounced: 60.3% for males and 66.6% for females. On the other hand, there is little difference in the proportion of farmers for the descendants: 54.0% for males vs. 53.0% for females.

Table 2.3
Proportion of Farmers among Japanese Immigrants and Descendants Aged 10 and Over in Labor Force by Sex, Brazil, 1958

Immigrant Status	Males			Females		
	Total	Farmers(%)	NF*(%)	Total	Farmers(%)	NF*(%)
All	117,893	57.6	42.4	33,224	57.7	42.3
Immigrants	67,518	60.3	39.7	11,492	66.6	33.4
Descendants	50,375	54.0	46.0	21,732	53.0	47.0

Source: Table 7 in Suzuki, 1965, "Japanese Immigrants in Brazil," Population Index, 31:2, p.135.
*NF = nonfarmers
Note: There were three categories, "farmers", "nonfarmers" and "farmers and nonfarmers," in the original table. For convenience and clarity, the first and third categories are combined into "farmer" here, and the second category remains the same.

Table 2.4 indicates the overall occupational distribution, including the most important one, farmer, for the population as a whole and for immigrants and descendants separately. Since the category of farmer here excludes those farmers who had nonfarming jobs, not like the one used in Table 2.3, the percentages of farmers for all three groups are consistently a little bit lower than those in Table 2.3. However, the variations are minimal (less than 1.2%) and the basic pattern remains the same. The exact percentages of farmers for the total population, immigrants, and descendants are 56.0%, 58.6% and 53.2%, respectively.

For the total population, the rankings of the occupations, excluding the category of farmer, are 1) salesmen (16.0%), 2) craftsmen (12.3%), 3) service (5.3%), 4) professional (which included technical, managerial and officials) (4.4%), 5) clerical (3.4%) and 6) transportation/communication (2.2%). The

remaining 0.4% under the category of "other" belongs to occupations classified as "fishermen," "miners," "quarrymen" and "unqualified laborers" in the census. For the immigrant group, the order remains the same for all the occupations, except that the order for "clerical" and "transportation/communication" is reversed: 1) salesmen (17.4%), 2) craftsmen (10.4%), 3) service (5.2%), 4) professional (4.2%), 5) transportation/communication (2.0%) and 6) clerical (1.7%). The three occupations within the category of "other" account for 0.6% of the immigrants.

There are some interesting changes in the occupational distribution for the descendant group. First, the percentages for both salesmen and craftsmen rank first and are identical to one another. Second, the proportion of clerical workers exceeds that of professionals, with the others more or less in the same order as those for the other two groups. More specifically, the proportions for the occupations are as follows: salesmen and craftsmen (14.4%), service (5.4%), clerical (5.2%), professionals (4.6%) and transportation/communication (2.4%). The remaining 0.4% is distributed among the three occupations mentioned above.

The overall trend in the changes of occupational distribution from the immigrant to descendant group can be summarized as follows: 1) The proportion of farmers and salesmen decreased from the immigrant to descendant group; 2) there were large increases in the proportions of craftsmen and clerical workers among the descendants, and 3) there was a slight increase in the proportions of transportation/communication, professionals and service, which were considered nontraditional occupations or occupations related to industrial and urban settings, among descendant.

Table 2.4
Occupational Distribution of Japanese Immigrants and Descendants Aged 10 and Over in the Labor Force, Brazil, 1958

Occupation	Immigrant Status		
	All (%)	Immigrants (%)	Descendants (%)
Farmer	56.0	58.6	53.2
Professional/ Technical	4.4	4.2	4.6
Clerical	3.4	1.7	5.2
Sales	16.0	17.4	14.4
Transportation	2.2	2.0	2.4
Crafts	12.3	10.4	14.4
Service	5.3	5.2	5.4
Other	0.4	0.6	0.4
Number	150,170	78,585	71,585

Source: Table 7 in Suzuki, 1972, "Japanese Immigrants in Brazil," Population Index, 31:2, p.135.

Note: There were ten occupations in the original table, in addition to the seven listed here. Due to the space limit and the insignificance of the three categories "fishermen," "miners, quarrymen" and "unqualified laborers," they are combined under the category of "other" in this table.

Suzuki (1981) described the change in the employment status of Japanese immigrants and their descendants by classifying them into two broad categories: independent persons and employed persons. For farmers, *colonos* and sharecroppers were considered employed persons and tenant farmers and land-owning farmers were regarded as independent persons. For nonfarmers, employed persons included employees and independent persons included employers and the self-employed. Suzuki wrote, "Whereas the number of independent persons rose from 14% in 1912 to 86% in 1958, the employed decreased in just the opposite proportion" (1981:63).

The distribution of industries in Table 2.5 provides us with a similar picture from a slightly different perspective. There were ten categories in the original table from Suzuki (1965), but I have listed here only six of them, which, by the way, cover almost 99.0% of all industries. Needless to say, agriculture has the highest proportion of workers for all three groups: 57.2% for all, 59.8% for immigrants and 54.3% for descendants. Apart from agriculture, for both the immigrant and descendant groups, the order of the industries with the highest to lowest proportion of workers is the same. Therefore, the order of industries for the total population is the same as well. They are, in descending order, trade (17.5%), service (13.3%), manufacturing (7.2%), transportation (2.4%) and finance, insurance, real estate (1.4%). The remaining 1.0% under the category of "other" belongs to the industries of "government," "fisheries" and "mining." They are not listed here because they are negligible in terms of percentage.

Table 2.5
Japanese Immigrants and Descendants Aged 10 and Over in the Labor Force by Industry, Brazil, 1958

	Immigrant Status		
Industry	All (%)	Immigrants (%)	Descendants (%)
Agriculture	57.2	59.8	54.3
Manufacturing	7.2	6.5	8.0
Trade	17.5	18.3	16.6
Finance	1.4	1.1	1.8
Transportation	2.4	2.1	2.7
Service	13.3	11.3	15.5
Other	1.0	0.9	1.1
Number	150,170	78,585	71,585

Source: Table 7 in Suzuki, 1972, "Japanese Immigrants in Brazil," Population Index, 31:2.

Note: There were ten occupations in the original table, in addition to the six listed here. Due to the space limit and the insignificance of the three categories "fisheries," "mining" and "construction," they are combined under the category of "other" in this table.

Although the proportions of industries have exactly the same ordering for both the immigrant and descendant groups, there are variations in the exact proportions of all industries for the two groups. Apart from a decrease in the proportions of farmers, the descendants have increases of various degrees in the proportions of workers for all the industries except that of trade, which has a loss of 1.7% (18.3% for immigrants to 16.6% for descendants). The two biggest increases of workers occur in the industries of service and manufacturing for this group; the former increases by 4.2% (from 11.3% for immigrants to 15.5% for descendants) and the latter by 1.5% (from 6.5% for immigrants to 8.0% for descendants).

The agricultural status of postwar migrants and their descendants in 1958 is described in Sims (1972). The study, based on a survey of 4,268 Japanese farmers who arrived in Brazil during the period 1952-58, showed that of the total sample, 51.2% were *colonos*, 16.8% had become owner-farmers, 15.4% had become renters, 16% had been reduced to sharecroppers and 0.6% had become farm administrators. In comparing the prewar and postwar migrants in terms of ownership of land, Sims noted that "the private ownership of land was slightly more common among the prewar migrants (22%) than their postwar successors (16.8%)" (1972:250). However, one important fact about the prewar Japanese migrants was that only 1.3% of them were still *colonos* by 1958. Another significant characteristic of the Japanese farming community in the postwar period was that family workers took up 59.3% of all the farmers, "revealing the dependence of the farm families upon their own kin" (Sims, 1972:250).

On the other hand, the nonfarming Japanese population continued to grow, though not at a steady rate, as more and more people moved away from farms to the urban areas in search of better opportunities in other professions.

By the late 1950s, among nonfarmers, craftsmen constituted less than a quarter, the proportion of salesmen increased from 8% to more than 50%, and service workers accounted for 10%. Unskilled laborers used to account for almost a quarter of the total nonfarming Japanese population, but by the late 1950s they had virtually disappeared (Suzuki 1981).

The occupational status of nonfarming Japanese Brazilians was described in Sims (1972), who compared the prewar and postwar groups (see Table 2.6). There were striking differences between the prewar and postwar migrants in terms of occupational status; 81% of the prewar migrants were working for themselves, i.e., they were either employers or self-employed, while only 28.5% of the postwar group were doing so. By the same token, nearly two thirds of the postwar migrants were employees or working for others, whereas only 16.4% of the prewar group were so. The only advantage of the postwar group over the other was their higher proportion of managers (7.6% vs. 2.7%) due to an increased level of education and more diverse backgrounds among the postwar immigrants.

Table 2.6
A Comparison of Occupational Status
of Prewar and Postwar NonFarming Japanese Immigrants

Occupational Status	Prewar Immigrants (%)	Postwar Immigrants (%)
Self-employed	59.8	22.1
Employers	21.2	6.4
Employees	16.4	63.9
Managers	2.7	7.6

Source: Sims (1972)

In sum, tremendous changes took place in the occupational distribution of the Japanese population in Brazil during their first fifty years

in Brazil. The most obvious change was the sharp decrease in the proportion of farmers, from over 95% in the beginning decades of immigration to about 56.0% in the late fifties. Second, the percentage of *colonos* in the prewar Japanese migrants decreased from about 80% for the period before 1941 to 1.3% in 1958. Third, the *amarelos*, who were overwhelmingly made up of people of Japanese origin, exceeded all other racial groups in the proportion of employers. Fourth, they maintained the tradition of working as family units, which had advantages over individual workers in terms of utilizing human and capital resources.

Diversification of Agricultural Crops and High Productivity

Japanese-Brazilians are also considered to be "the first to move toward the diversification of crops in the São Paulo coffee-lands" (Dwyer and Lovell, 1990:187). In addition to coffee, the Japanese owner-farmers produced cotton, rice, potatoes and other new crops. A survey of 35,871 Japanese Brazilian farm families in 1958 revealed that the largest number of Japanese farmers grew coffee: 17.6% in São Paulo and 27.5% in the nation as a whole. Vegetable was the second largest crop, with a farming population of 13%. Cotton ranked third with a farming population of 7.3%. The majority of both the vegetable growers and cotton growers were in São Paulo (Sims, 1972).

The above study also described the employment status of the Japanese-Brazilian farmers in 1958. Seventy-five percent of the coffee growers, 43.9% of the cotton growers, about 50% of the poultry raisers and nearly one-third of the rice growers were owner-farmers, while 56.6% of the vegetable producers and 45.1% of the rice growers were renters. It was also noted that the *colonos* were important proportionally in coffee, poultry and potato farming.

It was not only the high proportions of the Japanese farmers in the above agricultural sectors that is important, but also their production that is more important in terms of their contribution to the agricultural development of Brazil. By the late 1930s, the Japanese-Brazilians accounted for more than 50% of the cotton produced in the state of São Paulo (James, 1937, cited in Dwyer and Lovell, 1990) and were responsible for 80% of the vegetable production in the suburban area of São Paulo city (Makabe, 1981).

In 1958, Japanese-Brazilians, with only one percent of the total farming population, produced about 62% of the tomatoes, 39% of the peanuts, 27% of the potatoes, about 12% of the eggs, and about 12% of the cotton produced in Brazil. They were also responsible for about 93% of the tomatoes, 92% of the tea, 68% of the potatoes, 43% of the peanuts, 37% of the eggs, 36% of the peppermint, 27% of the cotton, 22% of the banana produced in the state of São Paulo (see Table 2.7).

Table 2.7
Agricultural Production of Japanese-Brazilians
in São Paulo and Brazil by Crop, 1958

Crop	% of the Brazilian Total	% of the Sao Paulo Total
Tomatoes	61.7	93.3
Peanuts	39.1	42.8
Potatoes	27.0	67.9
Eggs	11.6	37.0
Cotton	11.6	26.8
Coffee	5.9	7.1
Banana	5.3	21.8
Fruits	2.9	-----
Rice	2.3	8.1
Tea	----	92.1
Peppermint	----	36.4

Source: Sims, 1972, p. 251

Studies on the social mobility of the Japanese Brazilians in the last two decades are extremely rare in the English language publications. One such study available is Dwyer and Lovell (1990), "Earning Differentials Between Whites and Japanese: The Case of Brazil". This study uses a sample of 272 white males and 242 Japanese males ages 18-64, from the 0.8% sample of the 1980 census of Brazil. The main findings of this study are: (1) the average earnings of Japanese males are 61% higher than that of whites; (2) 48% of Japanese males have more than nine years of schooling compared to 24% for white males; (3) only 51% of the Japanese are workers whereas 75% of the whites are workers; (4) three times as many Japanese as whites are employers and 32% of Japanese versus 19% of whites are self employed. These findings suggest that Japanese-Brazilians have surpassed whites in terms of many important social indicators.

Educational Status

Educational status of a population is usually measured by its literacy (illiteracy) level and the percentages of people who have received elementary, secondary and higher education among its literate people. There is ample evidence that from the very beginning, Japanese-Brazilians fared very well in terms of educational status among the various immigrant groups and among the racial groups as well.

The literacy rate of the Japanese immigrants was one of the highest among all immigrant groups through time. For the prewar period 1908-1941, the Japanese immigrants ranked second after the Germans, with a literacy rate of 72.9% (compared to 87.2% for Germans, 59.6% for Italians and 43.1% for Portuguese) (Fujii and Smith, 1959). However, it should be noted that the

literacy rate was then measured in terms of the ability to read and write in the native languages of immigrants, not in Portuguese, the official language of Brazil.

However, according to the 1940 and 1950 census, the illiteracy rate for the yellow people was the lowest among the four racial groups (Smith, 1972:490):

Race	1940	1950
Yellow	34%	17%
White	47%	34%
Pardos	71%	69%
Negroes	79%	73%

It is also worthwhile to point out that the illiteracy rate declined by 50% among the yellow people, while its rate of decline was not as great among the other three groups, especially among *pardos* and Negroes.

The 1958 Japanese Self-Census indicated that of all Japanese residing in Brazil aged 7 and over, the illiteracy rate was only 2.5%; 1.8% in urban areas and 3.8% in rural areas. The census also provided information on this subject for immigrants and descendants separately: the illiteracy rate for all immigrants was 1.5%, with 1.2% in urban areas and nearly 1.8% in rural areas. Interestingly, the illiteracy rate for descendants was slightly higher than that for immigrants: 3.2% for all descendants, with 2.2% in urban areas and 4.1% in rural areas (Suzuki, 1972).

Sims (1972) reported the result of a 1962 survey of 151,701 newspaper readers over 14 years of age to show the literacy rates in both Portuguese and Japanese among the Japanese-Brazilians at the time. According to this survey, 51.8% of the sample read Brazilian periodicals regularly, with 60.6% for urban residents and 40.5% for rural residents. Sims further concluded, by way of

computation, that "at least 22.4% of the community surveyed read Portuguese, while a minimum of 75.1% were literate in Japanese in 1962" (1972:258).

According to the 1950 census, the proportions of people who completed elementary schooling was much higher among the Yellow population than was the case nationwide (37.7% vs. 17.9%) (Smith and Fujii, 1959). The proportions of people who attended different levels of schooling among the Japanese immigrants and their descendants in 1958 were described in Suzuki (1965).

Table 2.8 offers a summary of the above information: In urban areas, 67.3% of the people aged 7 and over attended primary school, 29.2% attended secondary school, and 0.7% attended college, while in rural areas, the corresponding figures were 82.6%, 11.8% and 0.8%. When immigrants and descendants were compared, the latter did better than the former in urban areas, whereas the former did better than the latter in rural areas. For example, the percentages for primary and secondary schooling among the urban immigrants were 75.3 and 21.0, while the same percentages for their counterparts were 62.6 and 33.9. On the other hand, proportionately, more rural immigrants attended secondary school (14.5%) than did their counterparts (9.9). The proportions of people who attended college for all groups was less one percentage.

Suzuki (1981:65) noted that "a relatively high educational level in comparison to that of the society on a whole would seem to lessen handicaps affecting foreign immigrants in their struggle for a better life." The high literacy rate among Japanese migrants was indeed an important factor in their successful adaptation to the Brazilian society and their rapid upward social mobility from the initial status of *colonos*.

Table 2.8
Japanese Immigrants and Descendants Aged 7 and Over
by Level of Education and Residence, 1958

Residence	Total	Primary	Secondary	Higher Ed.
Urban	160,796	67.3	29.2	0.7
Immigrants	58,972	75.3	21.0	0.9
Descendants	101,824	62.6	33.9	0.5
Rural	189,565	82.6	11.8	0.8
Immigrants	77,610	81.2	14.5	0.8
Descendants	111,955	83.7	9.9	0.8

Source: Suzuki, 1965

Demographic Characteristics

The most distinctive demographic feature of Japanese immigration to Brazil was "family immigration," which was the direct result of a regulation imposed by the Brazilian government. According to this regulation, an immigrant family must have at least three capable laborers who were above fifteen years of age. Consequently, about 95% of the Japanese immigrants between 1908-1941 and 80% between 1954-1956 came to Brazil in such family groups, as compared to 64% and 54% of the total immigrant population in these two time periods (Fujii and Smith, 1959).

As a correlate of the high proportion of family units among the Japanese immigrants, the percentage of married people was also high among them, and it gradually decreased with the fall of the proportion of family units among the immigrants over the years. Fujii and Smith (1959) reported that for the period 1908-1941, the percentages for single, married and widowed people were 56.0%, 42.3%, and 1.7%; for the period 1954-56, they were 64.4%,

33.5% and 2.1%. The proportions of singles and widowed increased by 8.4% and 0.4, whereas the proportion of married decreased by 8.8%. This was probably resulted from the relaxation of family unit rule applied to Japanese immigrants during the late fifties.

Table 2.9 illustrates the marital status of the Japanese population aged 15 and over by sex and generation in 1958. For the whole population, 44.5% of the males and 35.9% of the females were single, while 52.3% of the males and 56.6% of the females were married. The proportion of married people was up by more than ten percent from 42.3% in the period 1908-1941. The percentage of married people among the immigrants was even higher due to the fact that most of the immigrants were adults and had become parents or grandparents by 1958. The proportion of married people for the total population was heavily affected by that of the immigrants since they were still the majority at that time. In contrast, the percentage of married people among the second generation of Japanese was far lower than that for the immigrants, due to their relatively young age.

Table 2.9
Marital Status of the Japanese Population in Brazil
by Sex and Generation, 1958

Immigrant Status	Males				Females			
	Sin.	Mar.	Sep.	Wid.	Sin.	Mar.	Sep.	Wid.
All Japanese	44.5	52.3	0.4	2.8	35.9	56.6	0.6	6.9
Immigrants	14.9	79.4	0.6	5.1	5.8	79.9	0.8	13.4
2nd Generation	78.3	21.4	0.1	0.1	64.1	35.2	0.3	0.4
3rd & 4th Generation	98.5	1.5	---	---	95.8	4.1	---	---

Source: Suzuki, 1965
Note: Sin.=Single, Mar.=Married, Sep.=Separated, Wid.=Widowed

However, one common element among all groups, immigrants and descendants alike, was that proportionately more women were married than men; 56.6% vs. 52.3% for all Japanese, 79.9% vs. 79.4 for immigrants, and 35.2% vs. 21.4% for the second generation. This was largely caused by the fact that women married at younger ages than men did in general. Therefore, the sexual differences in the percentage of married people among different groups was a main indicator of the mean age at marriage for the groups concerned.

Family type and structure are known to correlate with the socioeconomic well-being of a particular group. Suzuki (1981) showed a positive correlation between the Japanese family structure and the improvement of their economic status by comparing the frequency of family types with their economic status expressed in terms of the employment status of the family head and property ownership (see Table 2.10). He found out that among the land-owning farmers, 36% were three-generation families and 40% were "lineal" and "lineal and collateral" families; among the tenant farmers, the corresponding figures were 21% and 24%. In contrast, the percentages of three-generation families and "lineal" and "lineal and collateral" families among the sharecroppers and *colonos* were 16%, 20% and 10%, 11% respectively. Therefore, we can conclude that more independent farmers tend to have extended (three-generation) families and lineal or lineal/collateral families than employed farmers (sharecroppers and *colonos*). This, in turn, suggests that three-generation families, and lineal and lineal/collateral families may have a positive effect on the employment status, i.e., whether being an independent or employed person.

However, the pattern for non-farmers was just the opposite; employees had higher proportions of three-generation families (29%) and lineal, lineal/collateral families (31%) than did the self-employed (23%, 27%)

and employers (13%, 17%). This suggests that larger families may not be an advantage for non-agricultural workers. On the other hand, there was a positive association between the value of property owned in both rural and urban areas with three-generation families and lineal and lineal/collateral families. In other words, the proportion of three-generation families and lineal and lineal/collateral families increased with the increase in value of property owned. According to Suzuki (1981), in rural areas, the proportions of three-generation families for those who owned no property, low property, medium property and high property were 18%, 28%, 42% and 53% respectively, whereas for non-farmers in urban areas, those proportions were 17%, 24%, 34% and 37% respectively. The same pattern remained for lineal and lineal/collateral families (see Table 2.11).

Table 2.10
Proportion of Traditional Families among Japanese Heads of Family by Employment Status for Farmers and Non-Farmers in Brazil, 1958

Employment Status	Three-Generation Families (%)	Lineal and Lineal/Collateral Families (%)
Farmers		
Landowners	36	40
Tenant Farmers	21	24
Sharecroppers	16	20
Colonos	10	11
Non-Farmers		
Employees	29	31
Self-Employed	23	27
Employers	13	17

Source: Suzuki, 1981

As for the advantage of extended family and lineal and lineal/collateral family, Suzuki maintained, the "characteristics imply cohesion and active

cooperation among family members. Such cooperation is effected, inter alia, through family labor, i.e., family members work without wages in an establishment operated by the head or another family member"(1981:69).

Table 2.11
Proportion of Traditional Families among Japanese Farmers and Non-Farmers in Brazil by Value of Property Owned, 1958

Value of Property Owned	Three-Generation Families (%)	Lineal and Lineal/Collateral Families
Farmers		
None	18	21
Low	28	32
Medium	42	46
High	53	57
Non-Farmers		
None	17	26
Low	24	27
Medium	35	36
High	37	37

Source: Suzuki, 1981

Closely related to the family type and marital status of an immigrant group is its sex ratio, which is even more important when there are relatively few inter-groups marriages. During the period 1908-1941, the sex ratio of 128:100 among Japanese immigrants was significantly lower than that of any other major immigrant groups (146 for Spaniards, 175 for Germans, 183 for Italians, and 208 for Portuguese). However, the sex ratio of the Japanese immigrants rose to 157 for the period from 1954 to 1956 due to the relaxation of the regulation on family groups.

As would be predicted from the above data, the age composition of the Japanese was younger than that for other immigrant groups because more families usually mean more children. For example, about 30% of the

Japanese immigrants were 12 years of age or younger, compared to 23% among the total immigrants, during the period 1908 to 1941 (Fujii and Smith, 1959).

The 1950 Brazilian Census indicated some changes in some of the demographic characteristics of the *amarelo* population. For example, over 50% of the *amarelo* population were under twenty years of age, and the sex ratio for them dropped from 128 to 110.8. The fertility ratio (number of children under five years of age per 100 women aged 15-49) for *amarelos* in 1950 was 79.6, the highest among the four major racial groups (65.3 for white, 55.6 for Negro, and 69.2 for brown). On the other hand, the proportion of Asians in the Brazilian population remained at 0.6% from 1940 to 1950 (Smith, 1972). This may be due to the pause in Japanese migration to Brazil during the period 1942 to 1952.

The 1958 Japanese self-census offered information on the changes of the characteristics of the Japanese population at the time: The sex ratio was 108, a decrease of 2.8 from 110.8 in 1950; the number of people under 15 years of age was 40.5% of the total population, indicating that the population became younger than it was eight years ago; and rural residents accounted for about 55% and the urban residents 45%, showing large volumes of exodus from rural areas (Suzuki, 1972).

Summary

Japanese migration to Brazil started at the turn of the century because of Japan's internal problems of rural over-population and the impoverishment of agricultural workers. This was caused by loss of land, heavy taxation and detrimental competition with foreign farm products

during the period of initial industrialization and urbanization in Japan. At the same time, Japan faced strong resistance against overseas emigration in countries like Australia, the United States, Canada and Peru. By contrast, Brazil sought after Japanese farm laborers because of a severe labor shortage on coffee plantations after the abolishment of slavery in 1888, and particularly, in 1902 after the Italian government ceased subsidizing the migration of its agricultural laborers to Brazil.

Japanese immigrants were subsidized by the state of São Paulo from 1908 to 1923 and then by various Japanese emigration agencies, both private and governmental, up to the late 1960s. During the period 1908-1941, approximately 190,000 Japanese immigrants came to Brazil. After a ten-year pause from 1942-1952 due to World War II, the migration wave continued at a much lower rate until it virtually stopped in the late 1960s. The total number of immigrants during this period was estimated at 50,000-60,000 (Smith, 1979; Suzuki, 1981). The 1958 Japanese self-census indicated that the Japanese population in Brazil at the time was 429,413, of whom 32.3% were immigrants and 67.7% were their descendants.

The majority of the Japanese immigrants were farmers and started as *colonos* on coffee plantations in the state of São Paulo. They rose from the lowest and least privileged status of *colonos* to the middle class status in both rural and urban areas through their hard work during the 50 years after their first arrival in Brazil. The experience of the Japanese population during the 1960s and 1970s is proof of their continued success in upward social mobility.

The most cited reasons for the success story of Japanese immigrants are of two types; economic and cultural. The economic explanation emphasizes the split labor market (Bonacich, 1972a) and lack of economic competition from native Brazilians and other immigrant groups in Brazil. The cultural

explanation focuses on the adaptive ability of Japanese, and their traditional values and characteristics. It seems to me that the former is mostly related to external factors, and the latter to internal factors, from the viewpoint of the Japanese immigrants.

In comparing the experiences of Japanese immigrants in Canada and Brazil, Makabe (1981) concludes that the major reason for the success of Japanese immigrants in Brazil was the lack of economic competition from the native Brazilians and other immigrant groups and hence the lack of unfavorable differential treatment in wages because they occupied different labor market. He also notes that "ownership of land, which was the highest achievement to be attained for the immigrants, became possible relatively easily and quickly" (1981:800).

In contrast, Dwyer and Lovell (1990) explain the Japanese success mostly in terms of their adaptive ability, and their cultural values and characteristics. They point out three major reasons for their success: (1) "second generation Japanese-Brazilians quickly learned the language, business practices, and legal system of Brazil"; (2) "Japanese immigrants placed a great deal of emphasis on education"; (3) they were very industrious (1990:188). This mostly cultural explanation is similar to the one used for the explanation of the socioeconomic achievement of Asian-Americans in the U.S. (Bell, 1985; Kitano, 1969; Newsweek, 1982; Petersen, 1971).

These two types of explanation are very important in understanding the Japanese experience in Brazil, and they are complementary rather than mutually exclusive. However, there were also other factors that contributed to the success of Japanese-Brazilians, and they could come under either of the two types of explanation. To name just a few important ones, the human capital of the immigrants, the favorable economic growth and

industrialization in São Paulo, the continued close connections with the home country and financial and technological assistance from the home country, the establishment of agricultural cooperatives and ethnic enclaves, and lack of overt racial discrimination by the Brazilian society,

By human capital, I refer to the educational level, knowledge of farming and technological skills the Japanese immigrants and their descendants possessed. As shown above, the educational status of the Japanese population was the highest among the four census racial groups and they had advanced knowledge of intensive agriculture. These attributes translated into better adaptation to the new environment and greater efficiency and higher productivity, which would certainly result in higher economic profits.

The Japanese immigrants benefited tremendously from, as well as contributed to, "the remarkable economic and demographic growth of São Paulo attributable to the coffee industry and industrialization" (Tsuchida, 1978). The labor shortage on coffee plantations brought them to Brazil in the first place, and the urbanization and industrialization in the state of São Paulo offered them the opportunity of pioneering vegetable farming and the poultry industry. The development of the textile industry in São Paulo in the early 1930s created a huge domestic market for cotton, and Japanese Brazilians dominated the cotton industry from the outset due to their expertise in growing cotton.

Meanwhile, Japan's importation of large quantities of cotton in the mid 1930s from São Paulo also helped the Japanese Brazilian cotton growers. As Tsuchida put it, "cotton growing was instrumental in transforming small Japanese-owned farms into economically viable production units in Paulista agriculture" (1978:324). He even stated that "the cotton boom in the 1930s had

already enabled the Japanese to solidify their economic base in such a way that they and their descendants in Portuguese America could securely stand on their own feet in total isolation from their mother country" (1978:311).

The fact that the Japanese immigrants maintained close ties with and received financial and technical support from their home country, especially in the early years, was very important to their success in Brazil. The Japanese government and private companies financed various colonization projects and provided information, technical assistance in farming, and even improved seeds, which greatly promoted land ownership and increased agricultural productivity among the Japanese immigrants (Tsuchida, 1978).

Another important feature of the Japanese immigrants in Brazil was that from the outset, they established their own ethnic enclaves in the form of agricultural cooperatives and larger community settlements. Normano and Gerbi described the Japanese in the following way:

> The Japanese live almost completely isolated from the native element in Brazil. The population of their centers varies from three hundred to six or seven thousand, in cities, towns, and large fazendas, but always they remain in atmosphere and surroundings completely Japanese (1943:39).

Their agricultural cooperatives facilitated the transportation and the marketing of their products, and the ethnically homogeneous communities provided them "with adequate educational opportunities, medical care, technical assistance, loans, and above all, a sense of security" (Tsuchida, 1978:313). There is no doubt that these ethnic associations played a major role in the success of the Japanese immigrants.

Finally, the Japanese immigrants would not have achieved what they did in such a short time if they had been subjected to the severe systematic

racial discrimination by the dominant society as were their counterparts in North America (Daniels, 1977; Daniels, 1988; Kitano and Daniels, 1988; Lee, 1989). At least, there was no overt discrimination against them in the economic sphere so that they were able to demonstrate fully their valuable assets and compete on an equal footing with others for land ownership, property and social mobility. On the subject of anti-Japanese sentiment in Brazil, Tsuchida wrote:

> Devoid of any serious economic conflict between the Japanese community and the dominant society, charges against this ethnic minority centered around racial desirability and the intangible threat of Japanese imperialism. Anti-Japanese agitation was restricted to a small circle of intellectuals who advocated Japanese exclusion, on ideological ground, rather than economic and political reasons (1978:321).

On the other hand, the Japanese immigrants didn't compete with the natives for occupations then considered more favorable, such as commerce. They apparently avoided possible conflicts in their economic activities. They were first engaged in coffee growing, then pioneered cotton, vegetable and fruit farming, all of which were much needed by the Brazilian society. In other words, they had their own labor market, and were not in direct competition with the dominant society.

However, this does not imply that Brazil has been a racial democracy, as some scholars have advocated. In fact, there is a body of literature that indicates the scope of racial inequalities in Brazil (Hasenbalg, 1985; Lovell, 1989; Lovell and Dwyer, 1988; Silva, 1978; Silva, 1985; Wood and de Carvalho, 1988). Here, I only intend to show that one of the reasons for the Japanese success was that they experienced far less discrimination than did their counterparts in North America and some other South American countries.

They managed to rise from the bottom of the society and achieve middle class status within the first fifty years of their arrival mainly by hard work, assets in human capital, a traditional practice of working as family units, demographic factors (relatively balanced sex ratio and younger age structure), collective efforts and ethnic unity, strong support from the home country, a favorable economic situation in Brazil and a lack of overt discrimination against them, especially in the economic and political arenas.

CHAPTER 3
FERTILITY DIFFERENTIALS AMONG ASIANS, WHITES AND AFRO-BRAZILIANS

A Brief Review of Literature on Fertility Studies

Human fertility behavior is the subject of study in many disciplines of the social sciences, and various theories on fertility have been put forward. Some of the major fields of study that deal with human fertility are demography, sociology, economics, anthropology, psychology and biology. Each discipline tends to focus on slightly different aspects of human fertility behavior and differs somewhat in its approaches due to its distinct theoretical orientations and scopes of study. However, there are many things that fertility studies have in common.

The economic theory of fertility is perhaps the most influential among competing theories. The most important works of this school of thought are Leibenstein (1957), Becker (1960), Easterlin (1969) and Schultz (1973). By applying the economic theory of consumer behavior to childbearing decisions, they regarded human fertility as a result of rational decision based on an effort to "maximize satisfaction, given a range of goods, their prices, and his own tastes and income" (Easterlin, 1975:54). In other words, "children are viewed as a special kind of good, and fertility is seen as a response to the consumer's demand for children relative to other goods" (Easterlin 1975:54). Two conclusions implied in the economic approach of fertility are: (1) Other

things being equal, higher income usually results in higher fertility rate; (2) an increase in the price of children relative to other goods results in lower fertility.

Counter to the first hypothesis, cross-cultural and cross-sectional demographic data generally show that higher income groups tend to have fewer children compared to lower income groups in a country. Similarly, aggregate data show that more affluent and developed societies tend to have lower fertility rates than their less developed counterparts. It should be noted, however, that these studies may not represent an adequate test of the economic theory of fertility (which predicts a positive correlation between income and fertility). The reason is that aggregate data on fertility rates by income classes do not measure what economists refer to as the "pure income effect." That is, the effect of income after controlling for contraceptive knowledge and other determinants of fertility behavior.

The second hypothesis is valid and supported by some historical demographic data. Yet it offers little insight to differential fertility among various sub-populations of a society if we assume that "the price of children relative to other goods" is, more or less, the same for all the people in the same region at a certain period of time. Moreover, the economic theory of fertility analysis leaves little room for the role of sociocultural factors and other institutional constraints in the fertility decisions and behaviors of individuals, who live in a complex social context and are bound to be influenced by many external factors.

In addition, Easterlin (1975) and Todaro (1981) have applied microeconomic theory to the study of fertility. In this approach, fertility is determined mainly by three factors; 1) the demand for children, 2) the potential output of children, and 3) the cost of fertility regulation, which

includes both subjective and objective costs, as well as the time and money required to learn about and use specific techniques for limiting fertility.

The sociological theory of fertility is mainly represented by Davis and Blake (1956), Davis (1959), Freedman (1962), and Hawthorne (1970). In this approach, observed level of fertility is seen as the outcome of the interaction among biological processes, societal group factors and individual behavior (Robinson and Harbison, 1980). Social norms about family size are given considerable attention in this approach, and it is broader in scope and more dynamic than the economic approach. In an attempt to bridge the gap between the economic theory and sociological theory, Caldwell (1976, 1978) proposed a new "general theory" of fertility, which states that "fertility behavior in both pre-transitional and post-transitional societies is economically rational within the context of socially determined economic goals and within bounds largely set by biological and psychological factors" (1978:553). Recent development of this approach is reflected in the examination of the socioeconomic and proximate determinants of fertility. (Easterlin, 1983; Standing, 1983; Menken, 1987)

The psychological approach to fertility focuses on individual-level processes and places emphasis on psychological variables and measures. Fishbein (1972) argued that human fertility behavior was determined by people's intentions, the normative beliefs regarding fertility, and the personal attitudes toward the importance of these norms. Unlike the sociological approach, norms affect fertility through personal attitudes and intentions here. Other works of this orientation include Jaccard and Davidson (1976), and Friedman et al. (1976). In general, the psychological approach to fertility assumes that human fertility behavior is rational and purposeful, and that all

the other factors, economic and social, affect fertility through individual attitudes and intentions.

Anthropologists usually study fertility behavior in terms of the determinants of social and cultural differences within an evolutionary framework. Barlett (1980) identified three approaches to fertility within anthropology: the ecological approach, the cognitive approach and the statistical aggregate approach. Chagnon (1968) and Harris (1974) applied the ecological approach to explain the practice of female infanticide among the Yanomamo, and concluded that female infanticide was an effective way of limiting the overall fertility of the group. Cognitive anthropologists (e.g., Marshall, 1972a and Quinn, 1975) stressed the importance of individual-level decision making, and attempted to build models for the decision-making process. The third approach, the statistical aggregate approach, "stresses what people do, not what people say they do" (Barlett, 1980:168). More specifically, in this approach, "an anthropologist observes behavior, records outcomes, and then analyzes the patterns in the outcomes to construct a statistical profile of people who choose different options" (Barlett, 1980:168). Since most anthropological studies have dealt with relatively homogeneous societies in the past, they tended to assume that shared values and traditions and societal norms govern individuals' behavior, which in turn determine their fertility. In short, most anthropological approaches to fertility tend to focus on cultural patterns.

However, there is another approach to fertility in anthropology that stresses the role of material conditions or factors directly related to material conditions of people in examining their fertility behavior. For example, Harris and Ross (1987) focused on the material benefits and costs of child rearing, as well as other fertility regulatory measures, in their attempt to

explain the fertility behavior of preindustrial societies. Handwerker (1986) criticized the cultural approach to fertility as tautological, and offered a materialist explanation to fertility transition. Handwerker argued, "we cannot identify specific behavioral patterns and the ideas they presuppose independent of one another. To 'explain' behavior by reference to those ideas therefore constitutes a covert tautology" (1986:14). According to him, fertility transition occurs "when personal material well-being is determined less by personal relationships than by formal education and skill training." Handwerker further explained:

> This transformation occurs when changes in opportunity structure and the labor market increasingly reward educationally-acquired skills and perspectives, for these changes have the effect of sharply limiting or eliminating the expected intergenerational income flows both from children, and from the social relationships created by or through the use of children. (1986:3)

In terms of the relationship between education and fertility, Handwerker offered an insightful analysis:

> education or literacy itself can have no important effect on fertility. The linkage between education and fertility is contingent on opportunity structure, and will turn on the issue of how material well-being can best be created and maintained, and how educationally acquired skills and perspectives fit, or do not fit, into this process. (1986:18)

The above approaches not only differ in theoretical orientation, but also in unit of analysis. Both economic and psychological approaches to fertility focus primarily on individuals and tend to ignore the social, cultural and external factors beyond the individual level. In contrast, in sociological and anthropological approaches, the unit of analysis is usually the group,

which may be an extended family, a clan, a social class or the society as a whole. Even when individuals are the focus of attention, they are situated within the sociocultural context and regarded as members of a social group, rather than as isolated individuals acting on their own.

Fertility Differentials among Ethnic/Racial Groups in Modern States

It is well documented in the literature of demography and ethnic/racial studies that in multiethnic/racial societies, various ethnic/racial groups reproduce at different rates. For example, Rindfuss and Sweet (1977) reported different fertility rates for whites, blacks, American Indians, Mexican Americans, Chinese Americans and Japanese Americans in the United States for the period 1955-1969. These ethnic/racial groups in the United States continued to reproduce at different rates for the 1970s (Bean and Marcum, 1978) and 1980s (1980 census, cited in Farley and Allen, 1989). Fertility differentials among ethnic/racial groups in Canada were reported in Halli (1987) and Halli et al. (1990), and ethnic fertility differentials in China have been documented in the Chinese censuses since 1950. Racial variations in fertility rate in Brazil are also reported in the Brazilian censuses since 1950. In spite of the differences in ethnic/racial composition, social and political system and economic structure among these countries, one common element about fertility rate is almost universal, i.e., fertility rate seems to vary along ethnic/racial lines, as well as along economic, educational, religious and generational lines.

The study of differential fertility rates among various subgroups of a population is an important part of demographic studies because it leads to

better understanding of the factors responsible for differential fertility rates among groups. Furthermore, an examination of these factors reveals, among other things, the nature of relationships between different social groups, be they racial, cultural, or economic, or a combination of the above, in terms of access to education, level of employment and income, and ultimately the level of well-being.

Within the larger theoretical framework of fertility research in general, studies of differential fertility among various subgroups of a population (Goldscheider & Uhlenberg, 1969; Sly, 1970; Bean & Wood, 1974; Roberts & Lee, 1974; Gurak, 1978; Gurak, 1980; Johnson & Nishda, 1980; Bean & Swicegood, 1985) suggest three approaches. They are the cultural (or sub-cultural) approach, the structural (or social characteristics) approach and the minority group status approach.

The cultural (or subcultural) approach emphasizes the role of values, norms and ideology in determining a group's fertility behavior (Goldscheider & Uhlenberg, 1969). In this approach, one "searches for determinants of demographic variation in the history and cultural traditions of different subpopulations" (Frisbie and Bean, 1978:2). Furthermore, "even when groups are similar socially, demographically, and economically, minority group membership will continue to exert an effect on fertility" (Rindfuss & Sweet, 1977:113). This approach reflects Schermerhorn's definition of an ethnic group: "A collectivity within a larger society having real or putative common ancestry, memories of a shared historical past, and a cultural focus on one or more symbolic elements defined as the epitome of peoplehood" (Schermerhorn, 1970:12). Bean and Swicegood (1985:6) explained the higher fertility of Mexican Americans with the subcultural approach:

> the higher fertility of Mexican Americans stems from the persistence of cultural norms and values supporting large families, such as familism---a constellation of norms and values giving overriding importance to the collective needs of the family as opposed to the individual---or adherence to the pronatalist positions of the Catholic church, including prescriptions against certain forms of birth control.

The social characteristics (or structural) approach does not deny the possible validity of the subcultural approach, but it argues that differences in social status, such as education, occupation and income, account for most or all fertility differences among sub-groups. This approach also "implies that 'structural' assimilation with respect to education, occupation and income will lead to the elimination of fertility differences between majority and minority groups" (Bean & Swicegood 1985:7). The social characteristics approach has its grounding in the assimilation theory first put forward by Gordon (1964). It draws heavily from the idea of "structural assimilation," one of seven dimensions of assimilation that Gordon identified, and is sometimes referred to as "the assimilationist theory." According to this approach, fertility differentials are attributed to social, demographic and economic characteristics of various groups. When these factors are controlled, differences in fertility should disappear.

The minority group status approach was first proposed by Goldscheider and Uhlenberg (1969), and was thereafter tested and applied in various studies, such as Sly (1970), Roberts and Lee (1974), Johnson and Nishda (1980) and Bean and Swicegood (1985). The basic assumption of this approach is that the fertility of high socioeconomic status members of some groups (minority groups) is lower than that of their majority counterparts, even though fertility for the group as a whole exceeds that of the majority, because of the

insecurity that accompanies minority group status. Those minority members who are in higher socioeconomic standing tend to aspire to greater social mobility and therefore feel greater insecurity and marginality. In order to overcome the feeling of insecurity and the potential obstacles to greater success, these members are likely to lower their fertility to secure their already achieved status. Goldscheider and Uhlenberg (1969) used this approach to explain the lower fertility rate of highly educated black women as compared to similar white women. More recently, Halli (1987) applied this approach to the fertility of Asian groups in Canada.

Although these approaches differ in focus and have different theoretical orientations, in my opinion, they actually complement rather than contradict each other. They all contribute to the explanation of the complex causes of differential fertility among various racial/ethnic and/or socioeconomic groups. However, it is crucial to test these approaches against empirical data to determine the most important factor(s) by examining the associations between fertility rate and the possible biological, sociocultural and economic factors. Specifically, it is important to determine the degrees to which major independent variables contribute to the fertility level of a population as a way to assess the validity of the competing theories of human reproduction.

Fertility Differentials Among Asians, Whites and Afro-Brazilians

In this section, I examine the fertility levels of the three color groups in metropolitan São Paulo, Brazil by asking the following questions: Do these color groups have different fertility levels? If so, how do they differ and what

are the main causes for the differences? The hypothesis tested here is that socioeconomic status (defined by income level and educational attainment), rather than color, is the best predicator (but not the only) for differential fertility among different social groups. Thus, when income and education are controlled, color will contribute relatively little to subgroup differences in fertility level. It is also assumed that household income and mother's educational level is negatively correlated with women's fertility level; i.e., the higher the income and educational levels are, the lower the fertility level is. However, I do not assume that socioeconomic status alone accounts for all the differences in fertility of various groups. Therefore, I expect that even after controlling for the socioeconomic differences, some differences will remain in the fertility levels of different color groups, although the amount of variance in fertility explained by ethnic status will be relatively small.

The data set used here consists of women 15-49 years of age only since we are only concerned with fertility level. The dependent variable is fertility level, and the independent variables are place of residence, color, age, education, and mean income. Fertility level is here defined by the mean number of children ever born to women of a cohort classified by either color, age, educational level or income level. Following the conventional method, women are divided into either seven age groups (15-19, 20-24, 25-29, 30-34, 35-39, 40-45 and 45-49) or four age groups (15-19, 20-29, 30-39, and 40-49) for descriptive analysis.

In what follows, I describe the characteristics of the sample data, compare the mean fertility level by age group, color, educational level, income level and residence, and compare the fertility levels of the three color groups, controlling for the other variables. Finally, I conduct a series of

multivariate regression analyses to examine the relationships among the variables. The main findings are summarized at the end of the chapter.

Table 3.1 shows the mean number of children ever born to women in seven age groups and the standard deviations from the means. It also shows the proportions of each age group relative to the whole sample. The mean number of children ever born for the total sample is 1.89, with the expected increase from the lower to higher age groups.

Table 3.1
Mean Children Ever Born to Women of 15-49 Years of Age
by Age Group, Metropolitan São Paulo, Brazil (1980)

Age Group	Mean	Std Dev	Cases	%
15-19	0.12	0.41	39,916	20.3
20-24	0.77	1.09	38,968	19.8
25-29	1.66	1.56	33,482	17.0
30-34	2.50	1.98	26,925	13.7
35-39	3.28	2.46	21,916	11.1
40-44	3.85	2.91	19,163	9.7
45-49	4.17	3.20	16,283	8.3
Total	1.89	2.35	196,654	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

The mean number of children by color group is shown in Table 3.2. Afro-Brazilian women have the highest mean (2.18), with whites second (1.82) and Asians third (1.44). Given the sample size, these differences are statistically significant. The color composition of the women in the sample data is also indicated in Table 3.2; whites constitute 75.3%, Afro-Brazilians 22.6%, and Asians 2.1% of the sample population.

Table 3.2
Mean Children Ever Born to Women of 15-49 Years of Age
by Color Group, Metropolitan São Paulo, Brazil (1980)

Color Group	Mean	Std Dev	Cases	%
White	1.82	2.22	147,786	75.3
Afro-Brazilian	2.18	2.75	44,365	22.6
Asian	1.44	1.85	4,045	2.1
Total	1.89	2.35	196,195	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Table 3.3 illustrates the mean number of children ever born to women by age group and color. Here I still use five-year intervals for age groups in order to obtain a more detailed picture of the fertility behaviors of the three color groups. At every age level, Asian women have the lowest mean number of children, Afro-Brazilian women have the highest mean number of children, and the mean number of children for white women is above that of Asians but below that of Afro-Brazilians. Expectedly, the age group of 15-19 for all three color groups has very few children, particularly Asian, who, on average, have only 0.008 children. Furthermore, the mean number of children for Asian women ages 20-24 and 25-29 are extremely low; only 0.18 and 0.69 respectively. In contrast, the fertility levels of whites and Afro-Brazilians are much higher than that of Asians in these two age groups. The fertility differences among the color groups decrease for older age groups, but the basic pattern still remain. In sum, Asian women not only have fewer children on the average but also have children at older ages than do white women, who in turn have fewer children and have children at older than do Afro-Brazilian women.

Table 3.3
Mean Children Ever Born to Women of 15-49 Years of Age
by Age and Color Groups, Metropolitan São Paulo, Brazil (1980)

Age Group	Mean	Asian	White	Afro-Brazilian
15-19	0.12	0.01*	0.11	0.15
20-24	0.77	0.18	0.73	0.95
25-29	1.66	0.69	1.59	1.95
30-34	2.50	1.56	2.39	2.96
35-39	3.28	2.35	3.11	4.01
40-44	3.85	2.89	3.62	4.81
45-49	4.17	3.51	3.93	5.30
Total	1.89	1.44	1.82	2.18

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.
*The actual value is 0.008.

In Table 3.4, we see the fertility differences among the three color groups, controlling for both educational level and age. There are two interesting observations to make here with regard to the fertility level of the three color groups by educational level. First, fertility differences among the color groups for women with no schooling are very small (3.63 for Asians, 3.84 for whites and 3.96 for Afro-Brazilians). Second, the fertility levels of Afro-Brazilians at all educational levels, except for the one of no schooling, are the lowest among the three color groups.

It may seem surprising for Afro-Brazilians to have lower fertility levels than those of whites and Asians at all educational levels but the first (no schooling). This suggests that education may have greater negative impact on the fertility behavior of Afro-Brazilian women than on that of white and Asian women. I will test this hypothesis in the multivariate regression analyses later in this chapter. However, the main reason is, in my opinion,

the disproportionate distribution of Afro-Brazilians in educational level. Because over 20% of Afro-Brazilians have no schooling, compared to 9.9% of whites and 3.2% of Asians, their overall fertility level is still higher than those of whites and Asians, despite their lower fertility levels at all the other levels.

When the three color groups are compared by age group within the same educational level, Asians have children at older ages than do whites at all levels, and whites have children at older ages than do Afro-Brazilians at levels of less than 9 years of schooling. For example, Asian women between ages 15 and 19 rarely have children at all educational levels, while the mean number of children for white and Afro-Brazilian women ages 15-19 with less than 5 years of schooling is more than 0.20. Furthermore, the mean number of children for Asian women between ages 20 and 29 ranges from 0.22 to 0.96, while the mean for white women of the same age group ranges from 0.36 to 2.07, and that for Afro-Brazilian women of the same age group ranges from 0.17 to 2.12. At higher educational levels (9 or more years of schooling), however, Afro-Brazilian women have fewer children than do white women in all age groups and Asian women in most age groups (see Table 3.4).

The fertility levels of the three color groups, controlling for income and age, are shown in Table 3.5. First, we see the negative association between income and fertility level, i.e., lower income groups have higher fertility levels. The mean number of children for women from the lowest to the highest income level are 2.19, 1.25, 1.19, and 1.16, respectively. The difference between the fertility level of women in the first and second income levels is most pronounced (.83), and the differences among the upper three levels are not as obvious.

Table 3.4
Mean Children Ever Born to Women of 15-49 Years of Age
by Education, Age and Color Groups , Metropolitan São Paulo, Brazil (1980)

Years of School	Total	Asian	White	Afro-Brazilian
Zero Years	3.89	3.63	3.84	3.96
15-19	0.29	0.00	0.28	0.29
20-29	2.09	0.66	2.07	2.12
30-39	4.22	3.20	4.07	4.44
40-49	5.55	4.35	5.37	5.94
1-4 Years	2.30	2.55	2.32	2.26
15-19	0.21	0.02	0.21	0.20
20-29	1.55	0.96	1.54	1.60
30-39	3.02	2.39	2.96	3.29
40-49	3.83	3.32	3.70	4.51
5-8 Years	0.92	1.18	0.95	0.78
15-19	0.08	0.01	0.07	0.09
20-29	0.99	0.64	1.01	0.94
30-39	2.16	1.94	2.14	2.28
40-49	2.70	3.04	2.60	3.45
9-11 Years	0.73	0.73	0.77	0.49
15-19	0.02	0.00	0.02	0.02
20-29	0.53	0.36	0.56	0.40
30-39	1.75	1.63	1.80	1.35
40-49	2.31	2.52	2.32	1.79
12+ Years	0.81	0.61	0.85	0.55
15-19	0.00	0.00	0.00	0.20
20-29	0.35	0.22	0.36	0.17
30-39	1.40	1.08	1.43	1.15
40-49	1.98	1.66	2.02	1.24

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

What's surprising about the distribution of income levels is that over two thirds (68.8%) of the women ages 15-49 belong to the lowest income level, and over five sixths (85.7%) are in the bottom two income levels. This is a vivid description of the labor force participation and the economic status of the women under study here.

Table 3.5
Mean Children Ever Born to Women of 15-49 Years of Age by Income, Age and Color Groups, Metropolitan São Paulo, Brazil (1980)

Income Level	Total	Asian	White	Afro-Brazilian
To 1 MW	2.19	1.85	2.11	2.48
15-19	0.14	0.00	0.13	0.18
20-29	1.55	0.75	1.49	1.74
30-39	3.20	2.45	3.05	3.80
40-49	4.39	3.47	4.14	5.50
To 2 MW	1.25	0.74	1.17	1.48
15-19	0.04	0.01	0.03	0.06
20-29	0.62	0.13	0.55	0.77
30-39	2.61	1.44	2.52	2.83
40-49	3.57	2.70	3.41	3.99
To 3 MW	1.19	0.59	1.11	1.60
15-19	0.04	0.00	0.03	0.06
20-29	0.44	0.14	0.40	0.63
30-39	1.97	0.98	1.88	2.37
40-49	2.95	2.32	2.80	3.54
Above 3 MW	1.16	0.87	1.17	1.27
15-19	0.05	0.00	0.03	0.23
20-29	0.42	0.17	0.42	0.48
30-39	1.48	1.00	1.49	1.68
40-49	2.21	2.27	2.18	2.63

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

At every income level, the fertility level for Asian is lower than that of whites, which is in turn consistently lower than that of Afro-Brazilians. However, the gaps between the means for Asians and those for whites in every income group are much bigger than those between the means for whites and those for Afro-Brazilians, indicating again that Asians are significantly different from the other two groups, as far as fertility is concerned, even when income is controlled. More importantly, this shows that, after controlling for income, there are still fertility variations among the three color groups. When both income and age are controlled, the mean number of children for Afro-Brazilian women is higher than that for white women at all income levels and in all age groups, and the mean number of children for white women is higher than that for Asian women at all income levels and in all age groups.

Table 3.6 shows the fertility differences among the three color groups, controlling for residence and age. As expected, women in rural areas have a much higher fertility level than their urban counterparts. In fact, the fertility level for rural women is 42% more than that for urban women (2.58 for rural women vs. 1.81 for urban women). However, because rural women comprise only 9.6% of the population of women, their high fertility level has little impact on the fertility of the total population.

Color differences remain much the same in all age groups as well, after controlling for residence. The pattern shown here conforms to the general pattern exhibited by the data so far, i.e., Asians have fewer children on average than do whites, who in turn have fewer children on average than do Afro-Brazilians, whether they are in urban or rural areas. At the same time, place of residence has a uniform effect on all three groups; the mean fertility

level for rural women, whether Asian, white or Afro-Brazilian, is consistently higher than that for urban women.

Table 3.6
Mean Children Ever Born to Women of 15-49 Years of Age by Residence, Age and Color Groups, Metropolitan São Paulo, Brazil (1980)

Residence	Total	Asian	White	Afro-Brazilian
Urban	1.81	1.74	2.09	1.39
15-19	0.11	0.10	0.15	0.01
20-29	1.12	1.07	1.34	0.42
30-39	2.73	2.60	3.28	1.85
40-49	3.83	3.60	4.84	3.08
Rural	2.58	2.49	2.94	1.81
15-19	0.17	0.18	0.17	0.00
20-29	1.71	1.66	1.95	0.44
30-39	3.96	3.81	4.59	2.62
40-49	5.54	5.34	6.45	3.88

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Table 3.7 illustrates color differentials in fertility, controlling for both residence and education. Again, in both urban and rural areas, color differences in fertility for women with no schooling are very small. The mean number of children for Asian, white and Afro-Brazilian women of this category in urban areas are 3.51, 3.73 and 3.85, respectively, whereas those for the three color groups in rural areas are 4.25, 4.22 and 4.51, respectively.

In urban areas, the fertility level of Afro-Brazilians with any schooling above one year is lower than not only that of their white counterparts and also that of their Asian counterparts. This is surprising considering that the overall fertility level for Afro-Brazilians is much higher than those of the other two groups. Interestingly enough, Asian fertility level exceeds that of

whites at the levels of 1-4 and 5-8 years of schooling (2.52 and 1.21 for Asians vs. 2.32 and 0.97 for whites). For the top two educational levels (9-11 and 12 or more years of schooling), whites have slightly higher fertility level than Asians; 0.77 and 0.85 for whites and 0.73 and 0.62 for Asians.

Table 3.7
Mean Children Born to Women of 15-49 Years of Age
by Residence, Education and Color, Metropolitan São Paulo, Brazil (1980)

Residence	Mean	Asian (%)	White (%)	Afro-Brazilian (%)
Urban	1.81	1.39 (100.0)	1.74 (100.0)	2.09 (100.0)
Zero	3.77	3.51 (2.3)	3.73 (8.4)	3.85 (18.7)
1-4	2.30	2.52 (21.8)	2.32 (43.5)	2.25 (52.1)
5-8	0.93	1.21 (15.5)	0.97 (23.1)	0.79 (21.8)
9-11	0.74	0.73 (21.5)	0.77 (16.1)	0.48 (6.1)
12+	0.82	0.62 (15.6)	0.85 (8.8)	0.55 (1.4)
Rural	2.58	1.81 (100.0)	2.49 (100.0)	2.94 (100.0)
Zero	4.31	4.25 (4.9)	4.22 (24.0)	4.51 (35.5)
1-4	2.29	2.74 (45.4)	2.26 (60.9)	2.35 (54.0)
5-8	0.72	0.94 (23.1)	0.72 (9.8)	0.67 (8.7)
9-11	0.60	0.65 (19.4)	0.60 (4.2)	0.52 (1.7)
12+	0.75	0.16 (7.3)	0.87 (1.1)	0.49 (0.09)
Total	1.89	1.44	1.82	2.18

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.
Note: The percentages in brackets are the proportions of people belonging to various educational levels within color groups.

The patterns in rural areas are quite different; the fertility level of Asian is higher than that of whites at all levels except at the level of 12 or more years of schooling, and the fertility level of Afro-Brazilian is lower than that of white at all levels except the two lowest levels. However, since more whites and Afro-Brazilians are concentrated at the two lower educational

levels (about 85% of whites and 90% of Afro-Brazilians vs. about 50% of Asians), their overall fertility levels are still higher than that of Asians. For people with no schooling at all, the mean number of children for Afro-Brazilians (4.51) is the highest among the three groups (4.25 for Asians and 4.22 for whites). Of those with 1-4 years of schooling, Asians have the highest fertility level, 2.74, compared to 2.35 for Afro-Brazilians and 2.26 for whites. At the levels of 5-8 and 9-11 years of schooling, Afro-Brazilians have the lowest mean (0.67 and 0.52), but they account for only less than 10% of their rural population. The low fertility level of whites and Afro-Brazilians with twelve or more years of schooling (0.87 for the former and 0.49 for the latter) does not contribute much to their overall fertility level because they account for only about 1% of their respective populations. On the other hand, the fertility level of Asians with 12 or more years of schooling (0.16), which is substantially lower than that for the two other groups, affects their overall fertility level since they account for more than 7% of Asian in rural areas.

Considering the overall mean fertility level for each group, it appears that there are two causes for the unpredicted distribution: 1) proportionally, Asian women are over-represented in the top two educational levels (about 46%), compared to whites and Afro-Brazilians (about 13% and 7%, respectively); 2) Afro-Brazilians are over-represented in the category of no schooling (18.7% in urban areas and 35.5% in rural areas). Thus, the effect of education seems to be different for the three groups. In particular, education seems to have greater negative impact on the fertility level of Afro-Brazilians than on that of whites and Asians. If this is true, the results here then support the minority status hypothesis, which assumes that highly educated minority members tend to have fewer children than their majority

counterparts. It also suggests that one's educational level is an important factor in determining one's fertility level, regardless of residence and color.

Table 3.8 describes the color differentials in fertility, controlling for residence and income simultaneously. As shown above, fertility levels for all groups in urban areas are lower than those in rural areas, and Asians have lower fertility levels than whites in every income level, who in turn have lower fertility levels than Afro-Brazilians, in both urban and rural areas.

Table 3.8
Mean Children Ever Born to Women of 15-49 Years of Age
by Residence, Income and Color, Metropolitan São Paulo, Brazil (1980)

Residence	Mean	Asian	White	Afro-Brazilian
Urban	1.81	1.39	1.74	2.09
To 1 MW	2.12	1.80	2.04	2.40
To 2 MW	1.24	0.76	1.15	1.46
To 3 MW	1.18	0.62	1.10	1.55
Above 3 MW	1.16	0.88	1.16	1.26
Rural	2.58	1.81	2.49	2.94
To 1 MW	2.67	2.11	2.57	3.04
To 2 MW	1.68	0.57	1.61	1.91
To 3 MW	1.98	0.22	1.56	3.64
Above 3 MW	1.78	0.43	1.87	2.92
Total	1.89	1.44	1.82	2.18

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

To find out the degree of association between fertility level and the independent variables, while controlling for some or all the other variables, I use a set of multivariate regression analyses. The categorical variables, residence and color, are treated as a set of dummy variables. The dummy variable of urban areas is treated as the reference group and the dummy variable of rural areas is compared to it. Similarly, the dummy variable of

whites is considered as the reference group, against which the other two color groups are compared. Age and years of schooling are treated as interval variables without modifications, but income is treated as an interval variable with modifications such that the minimum wage in 1980 (4,150 cruzeiros) is used as the unit of income, instead of the original unit (one cruzeiros) in the census.

In order to compare the effects of various variables on fertility level, a total of seven regression models are developed. The first model measures the effects of age and residence, the second one measures the effects of not only age and residence but also the socioeconomic variables, education and income. The third model measures the effects of age, residence and color, and the fourth one, the complete model, measures the effects of all the variables examined here. Models 5-7 are developed solely to examine whether education and income have different effects on different color groups.

Based on the findings in the previous descriptive analysis, I first build a regression model with only age and residence. This model tells us three things: 1) One unit of increase in age increases the mean number of children by 0.1461, with residence included in the model; 2) being in rural areas increases the mean number of children by 0.8294, with age considered; 3) this model with the two variables explains 36.7% (the R-square for the model) of the total variation in fertility for all the people in the sample data (see Model (1) in Table 3.9).

To examine the cumulative effects of age, residence and socioeconomic variables on fertility, education and income are entered into the existing model. We can interpret Model 2 in the following way: 1) A significant increase from 36.7% to 43.5% in the R-Square indicates that education and income explain 6.8% of the variance in fertility that is unexplained by the

variables in Model 1; 2) when education and income are introduced into the model, the coefficient of age decreases slightly, but the coefficient of rural areas (as opposed to urban areas) decreases dramatically by more than 50%, suggesting a relatively high degree of covariation between residence, education and income; 3) the negative signs of the coefficients of education and income indicate a negative correlation between education and fertility, and between income and fertility. More specifically, one year of increase in schooling reduces the mean number of children by 0.2838, and an increase of one minimum wage in average income reduces the mean number of children by 0.0997.

In order to measure the effects of color, and to compare them to those of education and income, Model 3 is obtained by adding the dummy variables representing Afro-Brazilians and Asians (whites is the reference group) into the first model. There are several things to point out here: First, unlike in Model 2, there are little changes in the coefficients for age and rural areas in Model 3, compared to Model 1, indicating that variations in age and residence do not contribute much to the color differences in fertility. Second, when Afro-Brazilians and Asians are compared to whites, they both differ significantly from whites; the positive sign of the coefficient for Afro-Brazilians indicates a higher fertility level than that of whites, and the negative sign for the coefficient of Asians indicates a lower rate relative to whites. Specifically, controlling for age and residence, Afro-Brazilians, on average, have 0.4974 more children than do whites, and Asians, on average, have 0.6241 fewer children than do whites. Third, a mere increase of 0.97% in the R-square for Model 3 suggests that the color variables account for only less than 1% of the total variations in fertility that is not explained by age and residence. In other words, the third model with the color variables is no

better than the first model without the color variables in explaining the total variations in fertility for the sample data.

Table 3.9
Children Ever Born to Women Aged 20-49
Regressed on Age, Residence, Education, Income and Color

Independent Variables	Models						
	(1)	(2)	(3)	(4)	(5) W *	(6) AB*	(7) A*
Age	.1461	.1306	.1473	.1317	.1230	.1669	.1125
Residence							
Urban (Reference)							
Rural	.8294	.3635	.8261	.3793	.3449	.4694	.2070
Education		-.2838		-.2720	-.2795	-.2272	-.2080
Income**		-.0997		-.0992	-.0851	-.2771	-.0809
Color							
Whites (Reference)							
Afro-Brazilians			.4974	.1827			
Asians			-.6241	-.2476			
R^2	.3674	.4351	.3771	.4364	.4382	.4400	.4996
Constant	-2.4024	-.6340	-2.5355	-.7518	-.4902	-1.445	-.7650

Note:
*W = Whites, AB = Afro-Brazilians, and A = Asians
**The unit of income is the minimum wage in 1980 (4,150 cruzeiros).
P-value for all coefficients < .000.

As expected, the fourth model, the complete model with all the variables in it, is very similar to the second model. Compared to the second model, the coefficients of age and rural areas (as opposed to urban areas) increase slightly, while the coefficients of education and income decrease

slightly. Meanwhile, the R-square in Model 4 increase only 0.13% to 43.64 from 43.51% in Model 2. This indicates that the color variables explain only 0.13% more of the total variation in fertility that is not explained by the other variables in Model 2. However, compared to Model 3, the coefficients of Afro-Brazilians and Asians (as opposed to whites) drop significantly from 0.4974 to 0.1827 for the former and from -0.6241 to -0.2476 for the latter. This suggests that when the effects of age, residence, education, income and color are measured simultaneously, Afro-Brazilians and Asians differ less from whites in fertility level. To put it differently, most of the fertility differences between whites and Afro-Brazilians, and between whites and Asians are due to factors other than color.

Models 5, 6 and 7 are developed to test the hypothesis that education and income have different effects on different color groups. I run a separate regression analysis for each of the three group, with the variables of age, residence, education and income; Model 5 is for whites, Model 6 is Afro-Brazilians and Model 7 is for Asians. Thus, we can measure the effect of the same variable on different color group by comparing the coefficients of this variable across Models 5, 6 and 7.

First, the coefficients of education in the three models show that education does have different effects on the fertility levels of the three color groups, but not in the order I expected. Specifically, the coefficients of education in Models 5-7 (-0.2795 for whites, -0.2272 for Afro-Brazilians and -0.2080 for Asians) tell us that the (negative) effect of education is greater for whites than it is for Afro-Brazilians, and it is the least for Asians. In other words, a one unit increase in education reduces the mean number of children by 0.2795 for whites, by 0.2272 for Afro-Brazilians and by 0.2080 for Asians.

Second, the (negative) effect of income on fertility level is much greater for Afro-Brazilians than it is for whites and Asians, as indicated by the coefficients of income the three models. We can interpret the coefficients of income in the following way; a one unit of increase in income, i.e., an increase of 4,150 cruzeiros, results in a reduction of 0.2771 in the mean number of children for Afro-Brazilians, while it results in a reduction of 0.0851 and 0.0809 in the mean number of children for whites and Asians, respectively. Finally, the R-squares in Models 5 and 6 (0.4382 and 0.4400) are very similar, but they are somewhat different from the R-square in Model 7 (0.4996). This indicates that the variables in the models explain approximately the same amount of variance in fertility for whites and Afro-Brazilians, but they explain slightly more of the variation in fertility for Asians.

In addition, we see the coefficient of age for Afro-Brazilians in Model 6 (0.1669) is considerably higher than those for whites (0.1125) and Asians (0.1230). This indicates that age has greater positive impact on the fertility level of Afro-Brazilians than that of whites or Asians, which confirms the conclusion from the descriptive analysis that Afro-Brazilians have children at younger ages than do the other two groups. We also notice that the coefficient of the dummy variable, rural areas, for Afro-Brazilians in Model 6 (0.4694) is much higher than that for whites (0.3449) in Model 5 and that for Asians (0.2070) in Model 7. This suggests that the gap between the fertility level of urban and rural residents is bigger for Afro-Brazilians than it is either for whites or Asians, which is consistent with the result of the descriptive analysis.

Summary

The descriptive analyses of the sample data show that the fertility level of Brazilian women varies by age, color, education, income and place of residence. When age is controlled, Asians have the lowest mean number of children and Afro-Brazilians have the highest mean, with whites in between in every age group.

When education and age are controlled simultaneously, the existing patterns of fertility differences among the three color groups change completely; the fertility level of Afro-Brazilians is the lowest among the three group, except at the level of no schooling, even where the color differences are minimal. This indicates that fertility is associated with more with education than with color. On the other hand, Asians have children at older ages than do whites, and whites have children at older ages than do Afro-Brazilians at the educational levels of less than 9 years of schooling. At higher educational levels, it is just the opposite; Afro-Brazilians have fewer children than do whites in all age groups, and do Asians in most age groups.

Color differences in fertility narrow a great deal when income and age are controlled simultaneously. The change in fertility level is most pronounced between the first and second income level for all three color groups. However, in spite of the decreasing gaps among the three groups at higher income levels, Asian fertility level is the lowest, white fertility level is in the middle, and Afro-Brazilian fertility level is the highest at all age levels. When residence and age are controlled simultaneously, color differences in fertility remain much the same for all age groups; Asians have fewer children on average than do whites, who in turn have fewer children than do Afro-Brazilians.

When both residence and education are controlled, there are some interesting changes in the fertility differences among the three color groups. In urban areas, Asian fertility level exceeds that of whites at the educational levels of 1-4 and 5-8 years of schooling, while the opposite is true at higher levels for these two groups. As before, the fertility level of Afro-Brazilians is the lowest among the three groups, except at the level of no schooling. In rural areas, Asians have the highest mean number of children among the three groups, except at the level of no schooling, where Afro-Brazilians have the highest mean. Nonetheless, the overall mean number of children for Asians is still the lowest in both urban and rural areas due to their much higher concentration at higher educational levels than the other two groups. Color differences in fertility do not change much when both residence and income are controlled.

The multivariate regression models show quantitatively the effects of various independent variables on fertility level. Model 1 in Table 3.9 tells us that both age and rural areas (as opposed to urban areas) are positively associated with fertility level, though the impact of the latter is much greater, and age and residence account for 36.7% of the total variation in fertility for the sample. The variables representing socioeconomic status, education and income, explain 6.8% more of the variation in fertility, with education having greater negative impact than income on fertility (see Model 2 in Table 3.9). Specifically, the mean number of children reduces by 0.2838 with one unit (year) increase in schooling, and reduces by 0.0997 with one unit (4,150 cruzeiros) increase in average income.

Model 3 in Table 3.9 shows that color accounts for only 0.97% of the total variation in fertility that is not explained by age and residence. However, it also shows that Afro-Brazilians and Asians are significantly

different from whites in terms of fertility; on average, the mean number of children for Afro-Brazilians is 0.4974 higher than that of whites and the mean number of children for Asians is 0.6241 lower than that of whites, after controlling for age and residence. A comparison of the R-square values in Models 2 and 3 indicates that socioeconomic status, i.e., education and income, has far greater impact than does color on fertility.

Model 4, the complete model with all the variables, is very similar to Model 2, which does not include the dummy variables for color. Compared to Model 2, the R-square increases only 0.13% in Model 4, suggesting that the negligible effect of color on fertility, after controlling for the other variables in the model. However, the large decreases in the coefficients of the dummy variables for color from Model 3 to Model 4 indicate that controlling for education and income, the three color groups do not differ as much as they did before these variables were controlled.

These findings support the social characteristics approach because in general groups with higher educational attainment and higher income have lower fertility levels. For example, Asians have the highest educational attainment (a mean of 6.65 years of schooling) and highest mean income (7,261 cruzeiros) among the three group, and their fertility level is the lowest. Likewise, Afro-Brazilians have the lowest educational attainment (a mean of 3.23 years of schooling) and lowest mean income (3,030 cruzeiros) among the three color groups, hence the highest fertility level. The overall educational level and mean income of whites rank second (4.9 years of schooling and 4,783 cruzeiros), and therefore, their overall fertility level is above that of Asians and below that of Afro-Brazilians. (The above values for mean years of schooling and mean income are obtained from the same data set and described in later chapters.)

In addition, the fact that Asians differ more from whites than do Afro-Brazilians suggests that cultural factors, such as religion and values and norms on fertility behavior might be at work. Unfortunately, since the census data do not allow us to examine the effect of cultural factors on fertility, I can not address this issue empirically. In order to adequately examine the complex causes of differential fertility outcomes among various social groups, we need to conduct qualitative, as well as quantitative, research, and consider a range of factors that are relevant to the problem.

CHAPTER 4
CHILD MORTALITY DIFFERENTIALS AMONG ASIANS, WHITES AND AFRO-BRAZILIANS

Major Determinants of Mortality and Racial/Ethnic Differentials in Mortality

It is well known in the demographic literature that the mortality rate of a population is determined not only by biological factors (e.g., age, sex and some genetic differences) and environmental factors (e.g., climate and natural resources) but also by socioeconomic factors (e.g., income, education and occupation) and cultural factors (e.g., membership in different racial/ethnic group, religious affiliation, and customs and practices related to health status). In other words, mortality rate of a population is the result of the interplay between the biological, environmental, socioeconomic and cultural conditions of the society in which the population in question live at a particular time period. On the relationship among the above factors, Vallin (1980:27) pointed out that:

> There is growing evidence that, within a framework of biological constraints (progressive aging of the body, limited life-span), and taking into account the geographical context that may modify these constraints, the main differences in mortality are of socioeconomic and cultural origin.

Wood and Lovell, citing Birdsall (1980), maintained that the level of mortality in a population is the result of the interaction of three sets of factors:

> (1) public health services, which influence mortality regardless of individual behavior (such as spraying insecticides that control malaria); (2) health and environmental services that reduce the costs of health care but require some individual responses (e.g., the availability of clean water); (3) and an array of individual characteristics (such as income, which affects health through nutrition and housing, and education) associated with the speed and efficiency with which individuals respond to health services and environmental threats (1992:709).

Because mortality is the result of the interaction among these complex factors, it is an important indicator of quality of life of a population or a sub-population that has its distinctive characteristics. Similarly, infant and child mortality rates provide a summary measure of the quality of life of a population, especially in developing countries, since they are also very sensitive to the conditions of the above factors, in addition to the "endogenous" and "exogenous" causes that are particular to infancy and early childhood, respectively. Infant and child mortality rate is therefore used as a fairly reliable index of social and public health conditions throughout the world.

In modern societies that are marked by socioeconomic differences, we see a great deal of variation among various social groups in terms of mortality rate. When socioeconomic differences are largely based on racial/ethnic group affiliation, as they are in many societies, mortality differentials vary along racial/ethnic lines as well. For example, in the United State, blacks have had a higher mortality rate than whites since 1940, when the comparable data between whites and blacks became first available (Farley and Allen 1989). Although the gap between the mortality rate of whites and blacks had reduced somewhat up until the early 1980s, it has unfortunately been on the rise in the second half of the 1980s. After

analyzing race differences in adult mortality, with controls for sociodemographic factors, Rogers (1992) found that: 1) The demographic variables, race, age and sex, appear to be related significantly to mortality when no other variables are controlled, 2) when family size and marital status or socioeconomic status is controlled separately, racial differences in mortality reduces considerably, 3) when all of the sociodemographic variables, age, sex, marital status, family size and income, are controlled simultaneously, race differences in mortality are eliminated. Thus, it is the sociodemographic factors, not race itself, that are the real causes of mortality differentials between whites and blacks in the United States.

Wood and Lovell (1992) examined racial inequality in child mortality and life expectancy in Brazil, using the 1950 and 1980 Brazilian Census. They found that although the life expectancy for whites and nonwhites increased by more than 18 and 19 years, respectively, from 1950 to 1980, the gap between them remained about the same over the 30-year period: "In 1950, whites outlived nonwhites by 7.5 years; in 1980, the comparable figure was 6.7 years" (1992:721). Farley and Allen (1989:47) reported the difference in infant mortality between whites and blacks in the U. S. during 1980s: "black children are about twice as likely as white children to die before attaining their first birthday." They also described the differences in the life span between whites and blacks in 1980; the life expectancy of white men (70.7 years) was seven years longer than that of blacks (63.7 years), and the life expectancy of white women (78.1 years) was 5.8 years longer than that of black women (72.3 years).

The purpose of this chapter is to use child mortality as a measure to compare the social wellbeing of Asians, whites and Afro-Brazilians in Brazil. As in other analyses in this study, the objective is to determine (A) if children born to Asian women have lower mortality than white and Afro-Brazilian

children, and (B) to find out whether differences are due exclusively to socioeconomic standing. If skin color continues to explain variences in child mortality, as I expect, then the findings suggest (although do not directly test) that cultural factors may be at work.

Child Mortality Differentials and Life Expectancy by Color Group

In this chapter, I first describe a few of the major socioeconomic indicators for Brazilian women of the three color groups, and then measure child mortality level of each group, using the indirect methods developed by Brass (Brass et al. 1968) and Trussell and Preston (Trussel and Preston 1982) (See Appendix B). Finally, I will analyze the association between the socioeconomic indicators and mortality level by applying the Tobit regression procedure.

The sample data used here for mortality measurement of Brazilian women consist of households with women aged 20-29, with at least one live birth. The variables selected as indicators of socioeconomic status of Brazilian women are the educational attainment of both the wife and husband, monthly household income, participation in the social security system and presence of piped water in the house. The importance of parental education (especially mother's) and household income on child mortality is widely documented in the literature. The educational attainment of the wife and husband is here measured by the number of years of school completed by them, and described as mother's and father's education in the following discussion. The variable, monthly household income, refers to the sum of both husband's and wife's income (in cruzeiros) from various sources (see

Chapter 1 for details). Whether or not a household participate in the social security system is an indicator of access to public health facilities because membership in the social security system entitles people to medical services (Wood and Lovell 1992). Presence or absence of running water in the house is an important indicator of housing quality, which has a significant effect on child mortality (Merrick 1985, Wood and Lovell 1992). Table 4.1 shows marked differences in socioeconomic indicators of the three groups:

TABLE 4.1
Social Indicators by Color Group, Metropolitan São Paulo, Brazil (1980)*

Social Indicator	Total (1)	Afro (2)	White (3)	Asian (4)
Mother's Education**	3.9	3.2	4.1	5.5
Father's Education**	4.0	3.4	4.3	5.5
Household Income***	28,773	21,588	31,276	72,227
% with social Security	86.8	83.3	88.3	88.9
% with Piped Water	81.1	68.5	86.4	98.0

*The data include households with women aged 20-29 years, with at least one live birth.
**Average years of school completed
***In 1980 Cruzeiros

Afro-Brazilian women have the lowest educational attainment of the three populations. The average years of schooling among Afro-Brazilians (3.2) is about a year below the comparable figure for white women (4.1), and over two years below that of Asian women (5.5). The same pattern holds for father's education, monthly household income, and the percent of homes with internal plumbing (a measure of water and housing quality). Average household income shows the largest variation: the average monthly income

among white households is about 45 percent higher than the income earned by Afro-Brazilians; Asian households, on the other hand, enjoy an income level that is 335 percent higher than that of Afro-Brazilians and 231 percent higher than that of whites. In contrast, the differences in the percent of households having the social security system is the smallest among the three color groups; 83.3% of Afro-Brazilian households, 88.3% of white households and 88.9% of Asian households.

Because the level of mortality of a population or a subpopulation is determined by the combined effects of such factors as income, housing, education and access to medical care, I expect to find corresponding differences in the survival probabilities of children born to white, Asian and Afro-Brazilian women.

Advances in indirect techniques of estimating the probability of death in the early childhood years have greatly enhanced the scope and accuracy of mortality research. Traditional measures of the death rate rely on vital registration statistics. The alternative approach, developed by William Brass (Brass et al. 1968), measures mortality indirectly from survey or census data. In the Brass method, the proportion of children surviving to mothers in different age groups (20-24; 25-29 and 30-34), multiplied by the appropriate correction factor, yields estimates of the probability of death by exact ages 2, 3 and 5. In the following, I estimate child mortality level for Asians, whites and Afro-Brazilians, using the Brass method. A detailed description of the Brass method by Wood and Lovell (1992) is included in Appendix 4.1.

Table 4.2 shows the estimates of mortality among children born to white, Asian and Afro-Brazilian mothers. The ${}_2q_0$ value refers to the probability of death by age two, the ${}_3q_0$ and ${}_5q_0$ values refer to the probability of death by age three and five, respectively. The estimates show that by age

two, mortality among Afro-Brazilian children -- 116 per thousand -- is the highest of all three groups (82 and 51 per thousand for whites and Asians respectively). In fact, the probability of death by age two among Afro-Brazilians is 1.41 times higher than the comparable figure for white children, and 2.27 times higher than the estimate for Asian children. The same pattern holds for the probability of death between birth and ages 3 and 5 among the three groups, i.e., the mortality estimate of Afro-Brazilians is higher than that of whites, which is in turn higher than that of Asians.

Table 4.2 also presents e^0 values, the average number of years expected at birth. They are calculated from the three estimates of child mortality, by using model life tables (e.g., Coale and Demeny 1983). The e^0 estimates indicate an expectation of life of 59.14 years for Afro-Brazilian, 65.77 years for whites, and 72.12 years for Asians. In other words, based on the child mortality levels of the sample data, Asians are expected to live 6.35 more years than whites, who are, in turn, expected to live 6.63 more years than Afro-Brazilians. These measures are interpreted as the life expectancy at birth associated with the levels of infant and child mortality estimated among the children born to women 20 to 34 years of age who declare themselves to be of a given skin color in the census interview.

The mortality differentials shown in Table 4.2 raise an important question: If we control for the major determinants of racial inequality (the variables presented in Table 4.1), do the children of Asian women continue to experience lower death rates compared to the children born to white or Afro-Brazilian mothers? If the mother's skin color is no longer statistically significant after controlling for key social indicators, we can conclude that the observed differences in child survival are due to differences in socioeconomic standing. Alternatively, if the mother's skin color continues to be associated

with the mortality of her children, the results indicate that additional factors are at work.

TABLE 4.2
Measures of Child Mortality by Color Group,
Metropolitan São Paulo, Brazil (1980)

Mortality Measure*	Total	Afro-Braizilian	White	Asian
$_2q_0$		.116	.082	.051
$_3q_0$		.126	.087	.054
$_5q_0$		.134	.093	.056
e^o		59.14	65.77	72.12
Mortality Ratio	1.09	1.39	.96	.49

*$_xq_0$ is the probability of death between age 0 and exact age x. e^0 is the average number of years of life expected, associated with the $_xq_0$ values (south model life table). The mortality ratio is the mean value of the ratio of actual to expected proportion dead among children of women with at least one live birth.

To simultaneously control for the several independent variables it is necessary to apply multivariate techniques. Rather than relying on mortality rates for groups of women by age, as in the Brass method noted above, we need, as a dependent variable, a measure of the mortality experience for each woman in the sample. Trussell and Preston (1982) proposed a method for calculating just such a measure. The Trussell-Preston technique provides a mortality index that is based on the ratio of actual to expected mortality for every woman who has experienced at least one live birth. The procedures for estimating the expected number of deaths are described by Wood and Lovell (1992) (see Appendix B). The mean value of the mortality ratio for the

population as a whole should be 1.00. Indeed, the estimate of the average mortality ratio for metropolitan São Paulo is 1.09, as shown at the bottom of Table 4.2. Among Afro-Brazilians, the mortality ratio is 1.39, indicating that the actual number of deaths substantially exceeds the expected number. On the other hand, the mortality ratio of .96 for whites is slightly below the expected number, and the mortality ratio of .49 for Asians is about half that of the total population. In effect, the mortality ratio confirms the racial differentials in child mortality estimated in terms of ${}_xq_0$ and e^0 values in Table 4.2.

The mortality ratio for individual women is of additional value because it permits the use of regression analysis. For the reasons discussed in Appendix 4.1, the Tobit regression procedure is the appropriate in this case. The results of regressing the mortality ratio on the various social indicators are given in Table 4.3. The model refers to the population of all women 20 to 29 years of age in metropolitan São Paulo. The negative signs for the coefficients indicate that maternal and paternal levels of education reduce mortality, as does income, membership in the social security system, and the presence of piped water in the home.

The numbers given in parentheses in Table 4.3 below the regression coefficients are measures of elasticity. On the basis of these estimates, we can conclude that a one percent increase in mother's education reduces mortality by 13.5 percent. Father's educational attainment and household income also reduce mortality, but to a lesser degree, as indicated by elasticities of .095 and .072, respectively. Similarly, net of the effects of the other variables in the equation, belonging to the social security system and the presence of running water inside the house are associated with a 22.8 and a 35.2 percent reduction in infant and child mortality.

TABLE 4.3
Mortality Ratio for Children Ever Born to Women
20-29 Years of Age, Regressed on Social Indicators
Metropolitan Sao Paulo, 1980

Independent Variable		Tobit Coefficient (elasticity)
Mother's Years of School		-.580 (-.135)
Father's Years of School		-.408 (-.095)
Household Income (log)		-.307 (-.072)
Social Security	Yes	-.928 (-.228)
	No*	--------
Piped Water	Yes	-1.421 (-.352)
	No*	--------
Color	Afro-Brazilian	1.010 (.242)
	Asian	-3.185 (-.578)
	White*	--------
-2 Log Likelihood		88,778
% w/a Value of Zero		85.9
Sample Size		21,015

*They are the reference categories.

The coefficients for the two color groups, shown at the bottom of the table, are of particular interest. The results indicate that being Afro-Brazilian increases the probability of death by 24.2 percent. Being Asian, in contrast, reduces the probability of death by 57.8 percent. In other words, Afro-Brazilian children die at a higher rate than do whites children even after statistically removing the effects of the major covariates of mortality: education, income, access to medical care, and housing quality. Similarly, net of the effects of socioeconomic standing, being Asian improves the chances of child survival (compared to white children). Therefore, I conclude that some of the differences in the life chances of Asian, white and Afro-Brazilian children are due to factors other than observed differences in socioeconomic standing.

Because the data at hand do not permit further empirical analyses, we can only speculate what these additional factors might be. For example, cultural differences could play a role, particularly in explaining the low mortality among Asians. Similarly, other findings regarding the black and mulatto population suggest that unmeasured forms of discrimination against Afro-Brazilians may account for their high mortality levels. Additional considerations include such variables as residential location within the city (associated with higher costs, greater distances from health care facilities, and higher environmental risks), and possible differences in the strength of the social networks to which families belong (thereby influencing the household's ability to deal with illness and emergency). If these observations are necessarily conjectural, the findings nonetheless provide quantitative estimates of the degree to which the historical legacies of African and Asian immigration to Brazil have led to marked differences in the life chances of children born in the metropolitan area of São Paulo.

Summary

The different experiences of the Portuguese, African and Asian populations in Brazil have led to marked differences in socioeconomic standing. Afro-Brazilians are at the bottom, whites are in the middle, and Asians are at the top. It would be worthwhile to explore in detail why such differences exist among the three color groups, especially considering the different historical backgrounds of whites and Asians, and their present positions in the social and political structures of the country. The purpose here however, has been to demonstrate the correlation between skin color and life chances among the three groups.

A comparison of child mortality and life expectancy among the three groups shows that there are obvious differences among them. As predicted, the Afro-Brazilian population has the highest mortality measures, and therefore the lowest life expectancy; whites have lower mortality levels than the Afro-Brazilians, and higher life expectancy than them; Asians have the lowest mortality levels and highest life expectancy among the three groups. Since we already know the differences in socioeconomic standing of these groups, we can conclude that life chances and socioeconomic status are highly associated with one another. However, we can not be sure whether the observed differences in child survival are completely due to differences in social indicators.

The Tobit regression analysis provides us with a deeper understanding of the relationships between child mortality and the social indicators examined here, and between child mortality and skin color: The variables indicating socioeconomic standing are all negatively correlated with mortality ratio. In descending order of importance, the variables are piped water, social

security, mother's education, father's education and household income. Nevertheless, significant differences remain among the three groups, even after controlling for the variables of social indicators. The result that being Afro-Brazilian increases the probability of death by 24.2 percent while being Asian reduces the probability of death by 57.8 percent indicate clearly that factors other than those investigated here are at work here. Some of these factors may be family size and structure, cultural differences (i.e., customs and practices associated with child-rearing and fertility rate and pattern), social support network, various forms of discrimination against Afro-Brazilians indirectly contributing to their high mortality levels, and some other socioeconomic variables that are not examined here, such as residential location within the city.

Finally, as the findings of this study have quantified the importance of the key social indicators examined here in relation to life chances, they have practical implications on how to improve the life chances of the people in low socioeconomic standing, particularly of those in metropolitan São Paulo, Brazil. The study also begs further investigation into the question of child mortality differentials, a major measurement of quality of life, among different racial/ethnic groups in modern nation states.

CHAPTER 5
EDUCATIONAL ATTAINMENT OF ASIANS, WHITES AND AFRO-BRAZILIANS

Having analyzed the differences in fertility and mortality, I now turn to examine the next key social indicator, educational attainment, for the three color groups in question. In modern societies, educational attainment of a population or a subgroup is directly linked to its quality of life. Thus, it is essential for us to measure and compare the educational levels of Asian-Brazilians, whites and Afro-Brazilians to find out where each group stands in terms of educational achievement in the Brazilians society. In the first section, I measure the school attendance rate of children ages 6-16, in the second section I focus on the educational attainment of men ages 18-65, and in the third sections, I examine the educational attainment of women age 18-65. Finally, I discuss the findings at the end of the chapter.

School Attendance Rate of Children Ages 6-16

The goal of this section is to test the hypothesis that, other things being equal, Asian children are more likely to attend school compared to white and Afro-Brazilian children. To test this hypothsis, I selected children ages 6-16 from the 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census for the measurement of school attendance.

Most children start school at age seven across Brazil, but in São Paulo, the most industrialized part of Brazil, children tend to start school earlier than in the other parts of Brazil. Based on the PNAD-1985 sample, Levison (1991) reported that 59% of 7-14 year olds in first grade began school at the age of seven, 24% of them at age six, 11% at age eight, and 5% between ages nine and fourteen. Thus, I include six-year olds in my calculation in order to obtain an accurate picture of school attendance by children of different color groups.

The school attendance rate of the entire sample is 71.5%, with rather stable high rates in the middle and lower rates at both ends of the age groups. Specifically, the in-school rate for six-year olds is 13% and the rates for children ages 7-14 are consistently between 70% and 90%, with peaks at ages nine and ten. The rates for 15 and 16-year olds drops to 62% and 52.5%. Table 5.1 shows the total number of children in each age group, the percent of each age group, and the average percentages of children in school for each age group. As expected, the attendance rate is low among children aged 6, then rises among children 8-12 years of age, only to drop off in the older ages (14-16).

Table 5.2 shows the considerable differences in school attendance among children of the three color groups. Asian children have the highest percent in school, 88.7%, followed by white children, 73.6%, and Afro-Brazilian children, 64.7%. The total number of children (168,064) in Table 5.2 is slightly lower than that in Table 5.1 (168,666), probably because a small number of people did not use any of the racial categories in the census. However, the number of children from each color group in the sample is proportional to the size of each group in the data, except that there are relatively fewer Asian children due to their relatively low fertility rate.

Table 5.1
Number of Children Ages 6-16 and the Percent in School
by Age, Metropolitan São Paulo, Brazil (1980)

Age Group	N	%	% in School
6	15,474	9.2	13.0
7	15,676	9.3	70.2
8	15,362	9.1	87.2
9	15,205	9.0	91.1
10	15,296	9.1	91.2
11	14,620	8.7	89.2
12	15,004	8.9	84.3
13	14,740	8.7	78.7
14	15,478	9.2	70.4
15	16,217	9.6	62.0
16	15,595	9.2	52.5
Total	168,666	100.0	71.5

Source: Weighted 3% sample data of Metroplitan São Paulo, 1980 Brazilian Census.

Table 5.2
Number of Children Ages 6-16 and the Percent in School
by Color Group, Metropolitan São Paulo, Brazil (1980)

Color Group	N	%	% in School
Asian	2,716	1.6	88.7
White	122,608	73.0	73.6
Afro-Brazilian	42,739	25.4	64.7
Total	168,064	100.0	71.6

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

The school attendance rate varies not only by color group but also by income level, as shown in Table 5.3. Mean monthly income was defined and divided into four income levels in Chapter 1. The total number of children (144,476) in Table 5.3 differs slightly from the previous ones mainly because these data are generated based on parents with children ages 6-16, instead of selecting children directly out the data. Similarly, the overall school attendance rate for this subset of data (72.8%) is slightly higher than the previous ones (71.5% Table 5.1 and 71.6% in Table 5.2) precisely because it excludes those children who were either orphans or didn't live in households headed by parents with income of some sort.

The school attendance rates for the four income levels are 52.8%, 59.2%, 68.9%, and 81.4% respectively. Note that the difference between the first and second income levels is smaller than the differences among the other levels. This suggests that an average income of two minimum wages, though it has a positive effect, does not affect the in-school rate as much as the higher levels of income.

Table 5.3
Distribution of Children Ages 6-16 and the Percent in School by Income Level, Metropolitan São Paulo, Brazil (1980)

Income	N	%	% in School
To 1 MW*	8,753	6.1	52.8
To 2 MW	29,726	20.6	59.2
To 3 MW	27,310	18.9	68.9
Above 3 MW	78,687	54.4	81.4
Total	144,476	100.0	72.8

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*MW = minimum wage

Other factors contributing to school attendance rate are residence, parents' education and gender. As is true across the developing world, urban residents in Brazil have higher educational levels than their rural counterparts. Since the data in this study are for the metropolitan area of São Paulo, the majority of the people (86.1%) are urban residents and only 13.9% are the rural residents. Nonetheless, as Table 5.4 shows, the school attendance rate of rrural children is much lower rate than that for urban children; 54.2% for rural children and 74.4% for urban children.

Table 5.4
Children Ages 6-16 and the Percent in School
by Residence, Metropolitan São Paulo, Brazil (1980)

Residence	N	%	% in School
Urban	145,201	86.1	74.4
Rural	23,465	13.9	54.2
Total	168,666	100.0	71.6

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

The impact of parents' education on their children's attendance in school is well documented. The sample data indicate that whether or not a parent had any schooling as well as how many years of schooling a parent had makes a lot of difference in whether a child is in school or not. Parents' education is here measured separately by the average number of years of school attended by the father and mother. Based on the Brazilian educational system, five educational levels are identified (see Chapter 1). Although there are no large differences between the impact of father's and that of mother's schooling on school attendance rate of their children, they are still listed

separately here to show exactly what impact each had on their children. Overall, mother's schooling has a slightly more positive impact than father's schooling at all but the highest level (12 or more years of schooling).

As shown in Table 5.5, the school attendance rates for children with mothers or fathers who had no schooling are very similar and quite low (about 59%) probably because people tend to marry those with a similar level of education. In contrast, the in-school rate increases considerably at each higher level of education: More than 72% of children with parents who had one to four years of schooling are in school, about 82% of children with fathers or mothers with 5-8 years of schooling are in school, and about 85% of children whose fathers or mothers had 9-11 years of schooling are in school. The difference between the top two levels of schooling is not very big; 85.6% vs. 88.3% for father's schooling and 86.8% vs. 87.0% for mother's schooling.

Table 5.5
Number of Children Ages 6-16 and the Percent in School
by Parents' Education, Metropolitan São Paulo, Brazil (1980)

Parents' Schooling	N	%	(%) in School
Father's Schooling			
Zero (years)	29,896	20.3	58.9
1-4	87,126	59.1	72.6
5-8	14,454	9.8	81.9
9-11	7,924	5.4	85.6
12+	8,019	5.4	88.3
Total	147,419	100.0	72.3
Mothers' Schooling			
Zero (years)	36,835	25.5	59.6
1-4	84,389	58.4	75.3
5-8	12,583	8.7	82.3
9-11	6,758	4.7	86.8
12+	3,989	2.7	87.0
Total	144,554	100.0	72.7

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

There is a slight difference in school attendance between male and female children. On the whole, male children have a slightly higher in-school rate than female children, 72.3% vs. 70.8%. These figures are less than one percent plus or minus the overall mean, 71.6%. Compared to some other developing countries, this degree of gender equality in school attendance for children ages 6-16 is amazingly high. The school attendance rates by gender is shown in Table 5.6:

Table 5.6
Number of Children Ages 6-16 and the Percent in School
by Sex, Metropolitan São Paulo, Brazil (1980)

Sex	N	%	% in School
Male	84,281	50.1	72.3
Female	83,783	49.9	70.8
Total	168,064	100.0	71.6

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

I have shown above the variations of in-school rate by age group, color group, income group, place of residence, parents' schooling and gender. The question now is whether the three color groups still differ from one another within the same age group, income group, place of residence, parents' schooling and gender. I constructed a series of crosstabulations with these variables and the results show a consistent and clear pattern of difference among the three color groups. Proportionately more Asian children are in school than white children, who in turn have a higher school attendance rate than Afro-Brazilian children in almost every category (see Table 5.7).

Table 5.7
In-School Rate of Children Ages 6-16 by Age and Color Groups, Metropolitan São Paulo, Brazil (1980)

Age	Sample (%)	Asian	White	Afro-Brazilian
6	13.0	21.5	14.1	9.4
7	70.2	94.9	74.2	58.0
8	87.2	96.2	89.7	79.5
9	91.1	99.2	92.5	86.8
10	91.2	98.0	92.6	87.3
11	89.2	95.9	90.4	85.6
12	84.4	96.1	85.3	81.0
13	78.7	95.1	80.5	72.4
14	70.4	95.7	72.8	61.8
15	62.0	92.8	64.9	51.1
16	52.5	85.2	56.0	39.6
Total	71.5	88.7	73.6	64.7

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Specifically, at age 6, 21.5% of Asian children are in school, compared to only 14.1% of white children and 9.4% of Afro-Brazilian children. At age 7, almost 95% of Asian children are in school, whereas 74.2% of white children and only 58% of Afro-Brazilian children are in school. Most importantly, from age 7 to 15, more than 90% of Asian children are in school at all times (for ages 7-14, over 95% of them are in school), and even at age 16, 85.2% of them are still in school. In contrast, over 90% of white children are in school only at ages 9-11, and the in-school rate for Afro-Brazilian children never reaches 90% at any age. More than 80% of white children are in school only at ages 8-13, and more than 80% of Afro-Brazilian children are in school only at ages 9-12. The in-school rate drops drastically from age 14 on for white children and it does so from age 13 on for Afro-Brazilian children. The onset

of leaving school starts at age 16 for Asian children, at age 14 for white children, and at age 13 for Afro-Brazilian children.

Figure 5.1 shows graphically the result of cross tabulation of school attendance rate by age and color group. At every age, the school attendance rate for Asian children is not only far above the overall sample mean but also significantly higher than that for white children, whose rate is slightly above the overall mean. On the other hand, the school attendance rate for Afro-Brazilian children is consistently lower than the sample mean, let alone the rates for the other two groups. The differences among the groups are greater at younger ages (6 and 7), and at older ages (14-16).

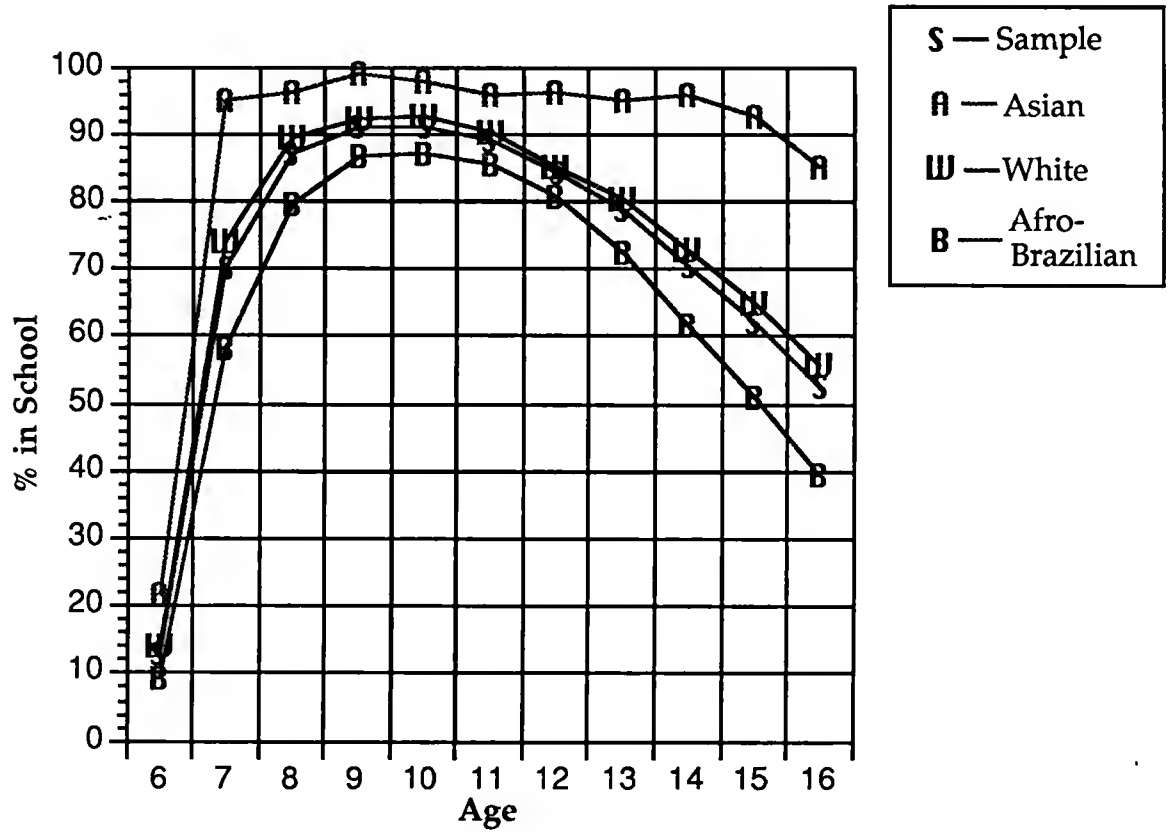

Figure 5.1 In-School Rate Children Ages 6-16 by Age and Color Groups, Metropolitan São Paulo, Brazil (1980)

As shown in Table 5.8, when income is controlled, the in-school rates still differ by color group; between 81.8% and 89.7% of Asian children for all income groups are in school, compared to between 52.9% and 82.6% for white children and between 51.9% and 74.9% for Afro-Brazilian children. In other words, inter-group variation is greater than intra-group variation even when income is controlled. However, at the lower two income levels, white and Afro-Brazilians are very similar, indicating the greatly diminished effect of factors other than parents' income on the school attendance rate of their children. It is safe to say that for whites and Afro-Brazilians with an average income of two minimum wages or less, the importance of color is minimal. Rather, it is the average income that matters most in determining whether more or fewer children are in school. On the other hand, at the upper two income levels, considerable difference still remains between whites and Afro-Brazilians, indicating that income alone can not explain the difference.

Table 5.8
In School Rate of Children Ages 6-16 by Income and Color Groups, Metropolitan São Paulo, Brazil (1980)

Income	Mean (%)	Asian	White	Afro-Brazilian
To 1 MW*	52.8	81.8	52.9	51.9
To 2 MW	59.2	87.3	59.8	57.7
To 3 MW	68.9	84.6	70.4	65.0
Above 3 MW	81.5	89.7	82.6	74.9
Total	71.6	88.7	73.6	64.7

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*MW = minimum wage

The three color groups differ not only when income is controlled, but also when place of residence is controlled. In urban areas, the in-school rates for Asian, white and Afro-Brazilians are 89.1%, 76.6% and 67%, respectively, while the corresponding figures in rural areas are 88.7%, 73.6% and 64.7%. Next, I will examine the color differences when both place of residence and income are controlled simultaneously.

Table 5.9 shows the in-school rate of children ages 6-16 by place of residence, income level and color group. Among urban residents, when income is controlled, differences still exist among the three groups, though the gap among the groups reduces somewhat, especially between white and Afro-Brazilian children in the lower two income groups. However, Asian children remain significantly different from the other two at every income level. For example, at the first income level (up to one minimum wage), the in-school rate for Asian children is about 20% higher than that for white and Afro-Brazilian children, and at the second income level (up to two minimum wages), it is more than 20% higher than that of the other two groups. At the third income level (up to three minimum wages), the in-school rate for Asian children is more than 12% higher than that of white children and more than 18% higher than that of Afro-Brazilian children. At the fourth income level, the gap among the three group becomes smaller but proportionately, 6.2% and 14.6% more Asian children are in school than white and Afro-Brazilian children, respectively.

On the other hand, the gap between white and Afro-Brazilian children narrows considerably at the lower half of the income strata, when place of residence and income are controlled. For instance, the difference between the in-school rate of white children and that of Afro-Brazilian children at the lower two income levels is only about 3%, compared to the difference of more

than 10% between the two when place of residence and income are not controlled simultaneously. This suggests that both place of residence and income play an important role in determining whether a child is in school or not because the gap between the two groups narrows a great deal when they are controlled. In other words, most of the difference can be explained by residence and income.

Table 5.9
In-School Rate of Children Age 6-16 by Region, Income and Color Groups, Metropolitan São Paulo, Brazil (1980)

Residence	Sample (%)	Asian	White	Afro-Brazilian
Urban	74.4	89.1	76.6	67.0
To 1 MW*	57.7	76.8	58.6	55.6
To 2 MW	63.4	87.6	64.2	61.5
To 3 MW	70.5	84.8	72.4	66.3
Above 3 MW	82.3	89.9	83.7	75.3
Rural	54.2	86.7	54.7	50.5
To 1 MW	45.3	95.6	44.8	45.7
To 2 MW	49.4	86.9	50.2	46.8
To 3 MW	59.4	83.8	60.0	56.0
Above 3 MW	69.0	88.1	67.8	68.7
Total	71.6	88.7	73.6	64.7

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.
*MW = minimum wage

At the two upper income levels in urban areas, significant differences still remain between white and Afro-Brazilian children in terms of school attendance rates. The gaps between white and Afro-Brazilian children at the third and fourth levels are 6.1% and 8.4%. In other words, the gap between the two groups widens as the average income grows. Figure 5.2 graphically illustrates the differences among the three groups at various income levels:

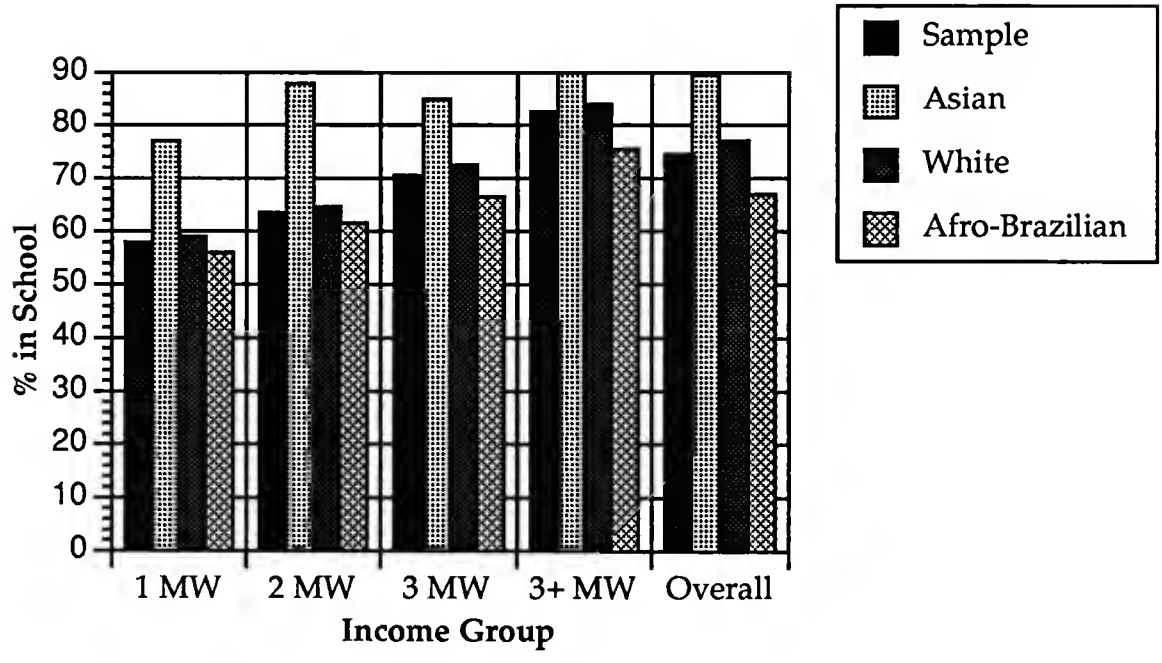

Figure 5.2 In-School Rate of Urban Children Ages 6-16 by Income and Color Groups, Metropolitan São Paulo, Brazil (1980)

In rural areas, while the school attendance rate for Asian children still remains much higher than that of the other two groups, the gap between the latter two further narrows. Particularly noteworthy is the fact that at the first income level (up to one minimum wage), Afro-Brazilian children exceed white children by 0.9%, and at the fourth level (above three minimum wages) they are behind white children by only 0.9%. This indicates that parents' income is even more important in explaining the difference of the in-school rates for white and Afro-Brazilian children in rural areas than it is in urban areas. In rural areas, there is less variation between whites and Afro-Brazilians within the same income group. This may be partly due to the fact that the overall in-school rate among rural residents is quite low for both groups (54.7% for whites and 50.5% for Afro-Brazilians). The differences among the three groups in rural areas are shown in Figure 5.3:

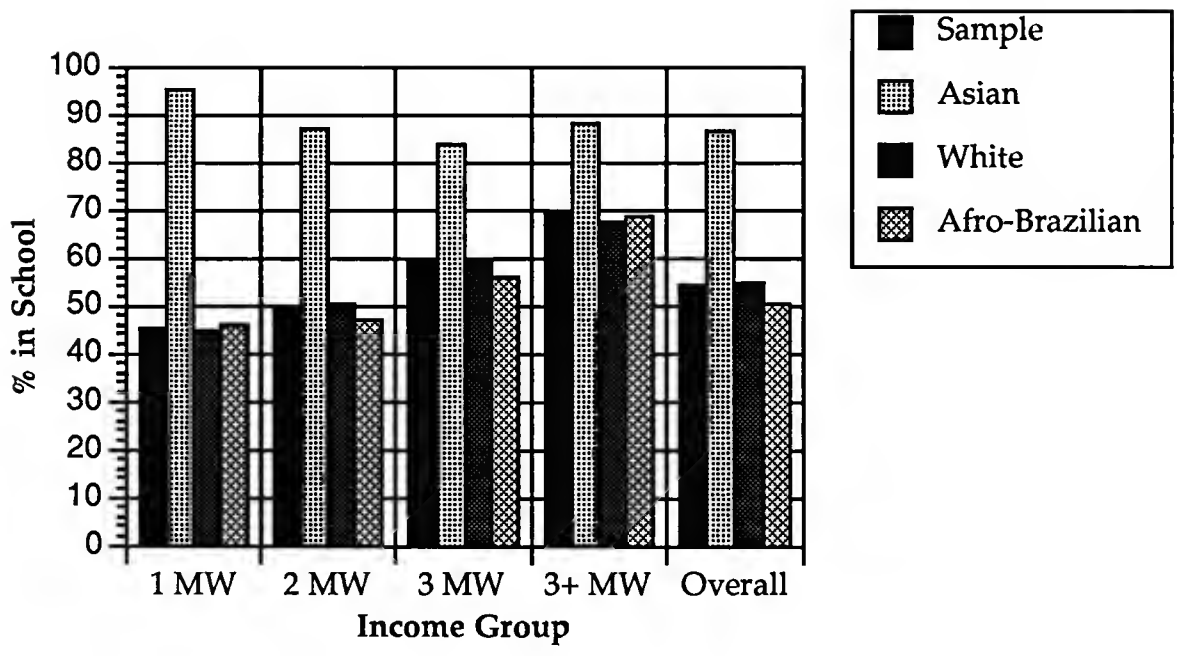

Figure 5.3 In-School Rate of Rural Children Ages 6-16 by Income and Color Groups, Metropolitan São Paulo, Brazil (1980)

In order to measure the precise impact of the independent variables (father's and mother's schooling, income, place of residence, and color) on the dependent variable (in-school rate), I ran a series of logistic regressions. This method is appropriate because the dependent variable is a dichotomy (whether or not a child is in school). The purpose of running logistic regression analysis here is to measure the impact of the various independent variables. Given the wide range of variations in in-school rate at different ages described in the previous analyses, I ran a separate test at each age. Rather than simply treating age as another independent variable, this method both controls for the age of child and, at the same time, enables us to clearly see the way in which the effect of each of the independent variables change across the various age groups.

In the 1980 Brazilian Census, father's and mother's schooling were coded as 1, 2, 3, 4, 5, 6 and 7, of which codes 1-4 refer to the actual years of schooling, code 5 refers to five to eight years of schooling, code 6 refers to nine to eleven years of schooling, and code 7 refers to twelve or more years of schooling. In this logistic regression, I recoded 5 and 6 to reflect the real mean years of schooling for each code, so that code 5 equals 6.5 years of schooling, and code 6 equals 10 years of schooling. I assigned a value of 12 (meaning 12 years of schooling) to code 7.

Household income is treated as an interval variable in this logistic regression analysis. According to the minimum wage standard (one minimum wage = 4,150 cruzerios) in 1980, household income is recoded into twenty six levels, i.e., Level 1 = 0-4,150 cruzerios, Level 2 = 4,151-8,300 cruzerios, ... , Level 25 = 99,601-103,750 cruzerios and Level 26 = 103,751 cruzerios and up. In other words, the unit of income is one minimum wage, up till 103,750 cruzerios, and any income beyond that is considered as a separate level.

As the requirement of logistic regression model, if an independent variable consists of only two categories (e.g., urban and rural for place of residence), or if it is a categorical variable (e.g., white, Afro-Brazilian and Asian for color in this analysis), one of them must be treated as the reference category to which the other(s) is (are) compared. Thus, the logistic regression model includes six independent variables, mother's schooling, father's schooling, household income, residing in urban areas (vs. residing in rural areas), being Afro-Brazilian (vs. being white) and being Asian (vs. being white).

Before I discuss the results of the analysis, I should emphasize that we are not measuring the cumulative effect of all the independent variables

together on the dependent variable here. Instead, we are measuring the effect of each independent variable separately, assuming that all other things are equal. For example, when we compare Asians to whites, we only need to look at the row values for Asians at various ages because whites are treated as the reference group in this analysis. Another important thing to keep in mind is that the values in Table 5.10 represent the amount of change in the dependent variable for a one-unit change in the independent variable. A one-unit change refers to being in one or the other category in the case of nominal variables, or a one-unit increase if the variable in question is an interval variable. For example, place of residence and color are nominal variables, and father's and mother's schooling and household income are interval variables in this analysis. The sign in front of the values indicates whether belonging to one or the other group, or a one-unit increase in an independent variable has a positive or negative impact on the dependent variable.

The interpretation of logistic regression coefficients is, however, not as straightforward as in multiple linear regression. They can be expressed in terms of the odds of an event occurring. Thus, the logistic equation can be written in terms of odds as:

$$\frac{\text{Prob. (event)}}{\text{Prob. (no event)}} = e^{B_0} e^{B_1 X_1} \ldots e^{B_p X_p}$$

This formula can be further modified as the following;

$$\text{Odds} = \frac{\text{Prob. (event)}}{\text{Prob. (no event)}} = \frac{1}{1 + e^{-z}}$$

Fortunately, we no longer have to calculate the odds by hand since they are automatically generated and given in the column Exp(B) of the computer

printout for SPSS. If a coefficient is positive, this factor will be greater than 1, and if a coefficient is negative, this factor will be less than 1. A factor of more than 1 indicates an increase in the odds, and a factor of less than 1 indicates the opposite. The main results of the regression analyses are given in Table 5.10, and the complete results are presented in Appendix C.

In Table 5.10, the regression coefficients for the independent variables are listed by age level, and the Exp(B) values for coefficients are listed below each coefficient in parentheses. The constant in each regression model is given in the last column. Significance level (p-value) for all coefficients are less than 0.05 unless it is marked with *, in which case it is 0.05 or greater. The category of rural residence is treated as the reference category, to which urban residence is compared, and the category of white is treated as the reference group, to which Afro-Brazilian and Asian are compared.

As shown in Table 5.10, the coefficients of all the independent variables, except the two dummy variables presenting Asians and Afro-Brazilians, are significantly different from 0 at a significance level of 0.05. The coefficient of the dummy variable, Afro-Brazilians, at age 12, and the coefficients of the dummy variable, Asians, at ages 6, 8, 10 and 11 are not significantly different from 0, meaning that they do not differ significantly from whites at these age levels in terms of in-school rate. In other words, at age twelve, whites and Afro-Brazilians are not significantly different, and at ages 6, 8, 10 and 11 whites and Asians are not significantly different.

Table 5.10
Logistic Regression of In-School Rate of Children Ages 6-16 on Mother's and Father's Education, Household Income, Residence and Color by Age, Metropolitan São Paulo, Brazil (1980)

	Regression Coefficients for Independent Variables						
Age	F Ed	M Ed	Income	Urban	Afro-B	Asian	Constant
6	.06 (1.06)	.02 (1.03)	.30 (1.03)	-.24 (.79)	-.22 (.80)	.27* (1.31)	-2.17
7	.11 (1.12)	.13 (1.14)	.09 (1.10)	.33 (1.39)	-.35 (.71)	1.40 (4.04)	-.44
8	.14 (1.15)	.18 (1.20)	.12 (1.12)	.56 (1.74)	-.39 (.68)	.21* (1.23)	.33
9	.10 (1.11)	.17 (1.19)	.11 (1.12)	.58 (1.78)	-.30 (.74)	1.67 (5.30)	.89
10	.14 (1.15)	.16 (1.18)	.08 (1.08)	.69 (1.99)	-.25 (.78)	.78* (2.18)	.93
11	.12 (1.12)	.12 (1.13)	.12 (1.12)	.99 (2.70)	-.15 (.86)	.12* (1.13)	.43
12	.10 (1.10)	.12 (1.13)	.14 (1.14)	1.09 (2.98)	.07* (1.07)	.89 (2.44)	-.22
13	.13 (1.13)	.13 (1.14)	.09 (1.10)	1.21 (3.37)	-.15 (.86)	1.05 (2.85)	-.64
14	.13 (1.13)	.12 (1.13)	.12 (1.12)	1.11 (3.04)	-.19 (.83)	1.59 (5.72)	-1.11
15	.13 (1.13)	.13 (1.14)	.08 (1.09)	1.02 (2.76)	-.19 (.83)	1.74 (5.72)	-1.37
16	.09 (1.09)	.13 (1.14)	.06 (1.06)	1.05 (2.86)	-.39 (.68)	1.16 (3.20)	-1.57

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Notes:
1. The categories of rural and white are treated as reference groups in this analysis.
2. The values in parentheses are the Exp(B) values, which indicate the change of odds for an event occurring.
3. P-values <.05, unless marked with *.

Now consider the impact of father's and mother's schooling, household income and urban residence on the dependent variable, in-school rate. The first two columns in Table 5.10 show that except at ages six and fourteen, mother's schooling has either slightly more positive impact than, or the same positive impact as father's schooling on the in-school rate of children ages 6-16. For instance, at age seven, a one-year increase in father's schooling results in an increase in in-school rate by a factor of 1.12 and one year increase in mother's schooling leads to an increase in the dependent variable by a factor of 1.14 . For most ages, the difference between the coefficient of father's schooling and that of mother's schooling is less than .04, which suggests that a one-unit of increase in either father's or mother's schooling would result in almost the same effect on the in-school rate. The effect of father's and mother's schooling on their children's in-school rate is compared in Figure 5.4:

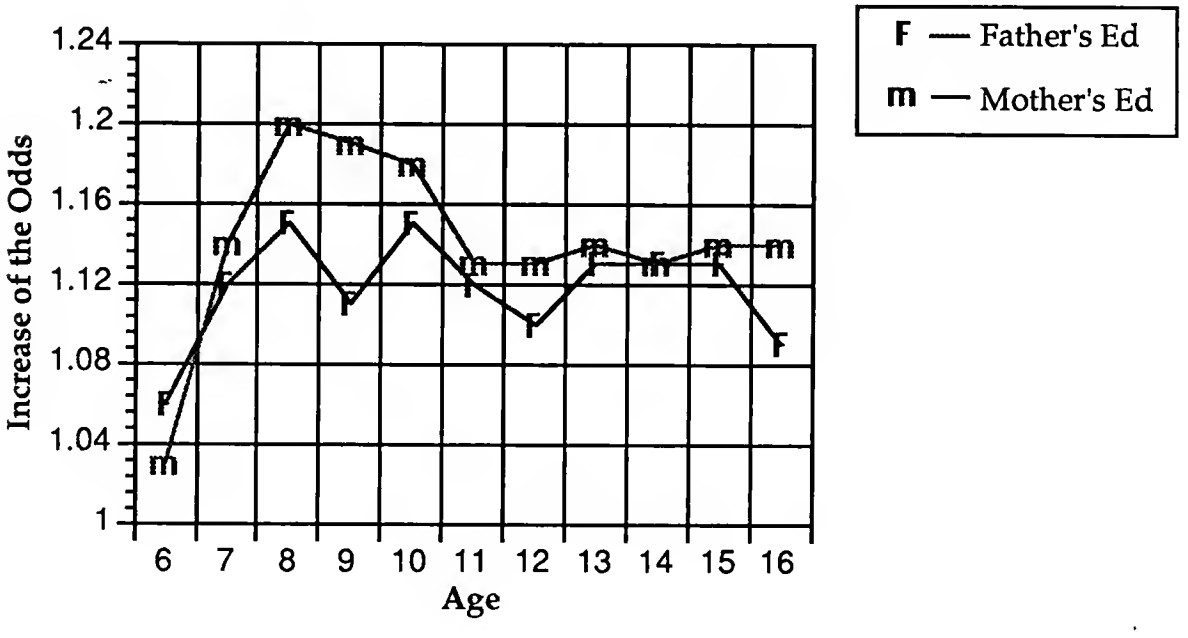

Figure 5.4 Effect of Father's and Mother's Schooling on Children's In-School Rate, Metropolitan São Paulo, Brazil (1980)

The positive coefficients of household income (the third column in Table 5.10) shows that it has a positive effect on the dependent variable for all ages. The Exp(B) values in parentheses below the coefficients indicate that a one-unit increase (i.e., 4,150 cruzerios) in household income increases the chance of being in school by a factor of 1.03-1.14 for all age levels. The general pattern of the degree of impact is that it gradually increases from age six to twelve, and gradually decreases thereafter. This pattern is illustrated in Figure 5.5, along with the effect of urban residence.

Urban residency has an increasingly more positive correlation with in-school rate as age increases, except for the negative value at age six, which may be ignored because only 13% of all six-year olds in the sample were in school. The increasingly positive values of coefficients for the category of urban residence illustrate the great advantage of residing in urban areas as opposed to residing in rural areas.

Another trend of the impact of urban residency on in-school rate is that it gradually increases from age seven to age thirteen, when it reaches the highest point, and then decreases slightly at ages 14-16. Even at the last three age levels, the coefficients of urban residency are still 1.11, 1.02, and 1.05, respectively, which in turn translate into high Exp(B) values of 3.04, 2.76 and 2.86. We can interpret these Exp(B) values as follows: All things being equal, the odds of urban children being in school, as opposed to rural children, increases by a factor of 39% at age 7, 74% at age 8, 78% at age 9, 99% at age 10, 170% at age 11, 198% at age 12, 237% at age 13, 204% at age 14, 176% at age 15 and 1.05 at age 16. Figure 5.5 shows the effects of household income and urban residency on in-school rate.

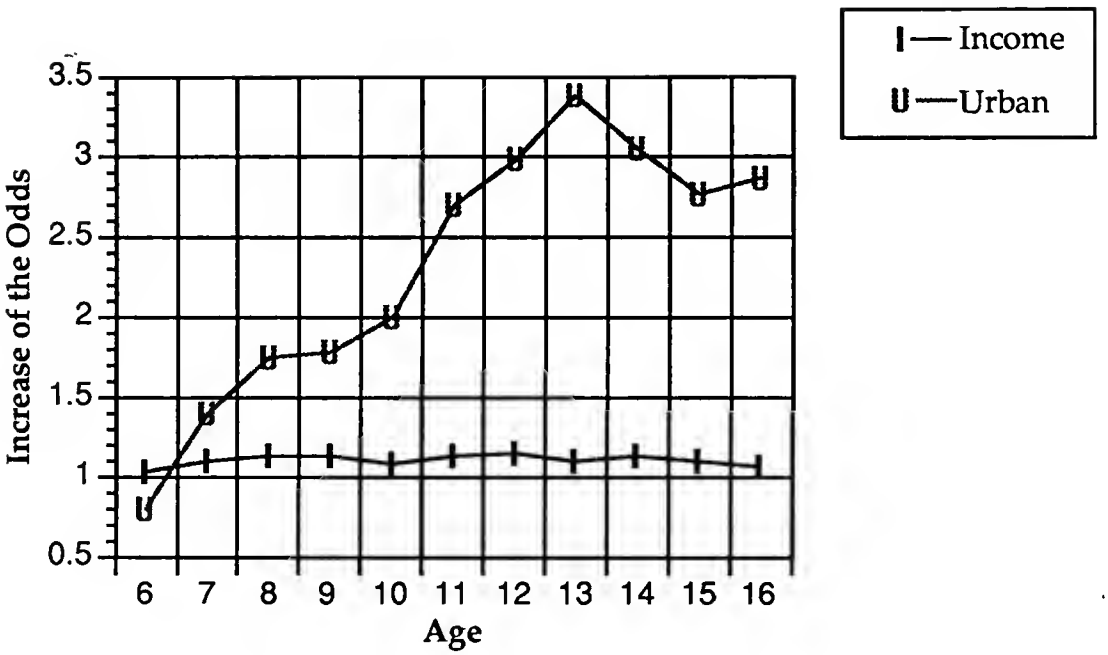

Figure 5.5 Effect of Household Income and Urban Residence on In-School Rate, Metropolitan São Paulo, Brazil (1980)

Asian children outperformed white children by a large margin, except at ages 6, 8, 10 and 11, where they are not significantly different from whites. It is possible that the extremely small number of Asian children, relative to white children, at these age levels is a main factor for the resulting significance level of greater than 0.05. The values of Exp(B) in Table 5.10 show that being Asian, as opposed to being white, increases the odds of being in school by 304% at age 7, 430% at age 9, 144% at age 12, 185% at age 13, 472% at ages 14 and 15 and 220% at age 16.

Compared to white children, Afro-Brazilian children consistently do worse, except at age twelve, where they are not significantly different from white cildren. However, the difference between them is not as great as the one between Asians and whites. The school attendance rates of Afro-Brazilian children ages 6-16 are 14-32% lower than those of white children

(see Table 5.1). Figure 5.6 illustrates the odds of Afro-Brazilian and Asian children being in school, compared to that of white children.

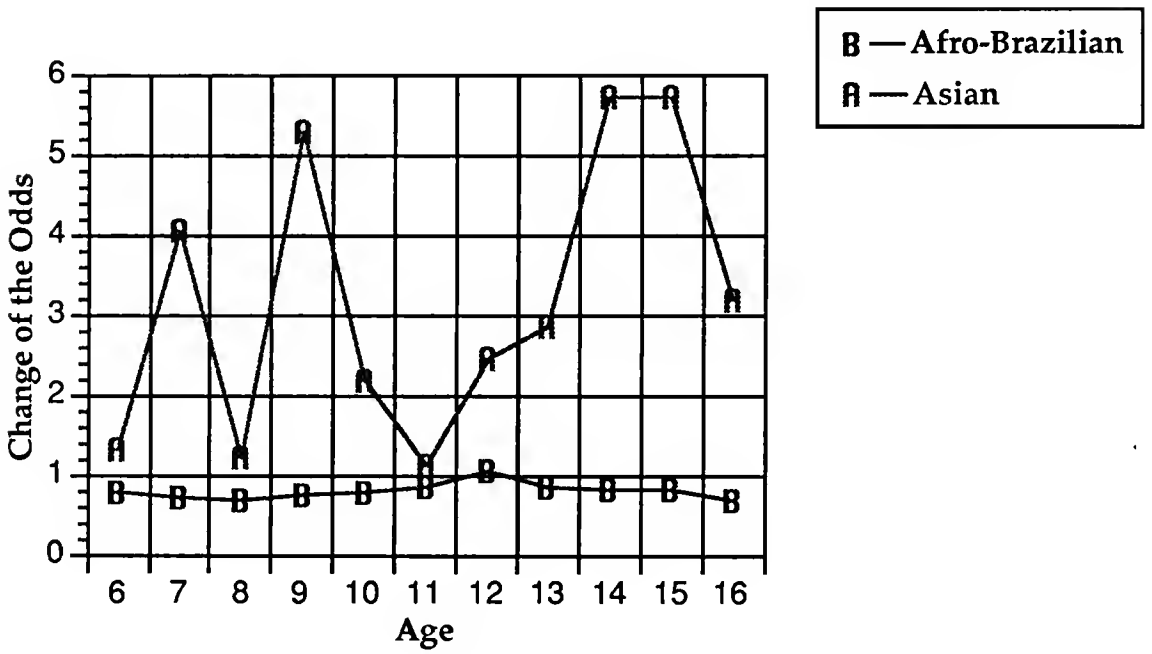

Figure 5.6 The Odds of Afro-Brazilian and Asian Children vs. White Children Being in School, Metropolitan São Paulo, Brazil (1980)

The pattern of Afro-Brazilian children's in-school rate at different age levels, compared to that of white children, may be indicative of the relationship between the two groups across time. For example, children who were sixteen years old in 1980 were born in 1964, and children who were six years old in 1980 were born in 1974. If we add six years, which is the minimum age for starting school, to the lower and upper limits for birth years, we get the period, 1970-1980, during which these children were in school. If we take in-school rate as one indication of the race relations between whites and Afro-Brazilians, we can make the following observation from Figure 5.6. The relation between whites and Afro-Brazilians improved from 1970 to 1974, declined from 1975 to 1978, and improved again in 1979

and 1980. Of course, the validity of this observation has to be tested by other data for the same time periods.

Educational Attainment of Men Ages 18-65

In order to measure the educational attainment of adults, I selected men and women ages 18-65 from the 3% sample data of São Paulo in the 1980 Brazilian Census. Preliminary analysis of the data shows a great deal of differences between the educational attainment of men and women. Since the main focus here is not the gender difference, but the color difference, I will discuss men and women separately, and offer brief comparisons between the educational attainment of men and women when necessary. Educational attainment is measured by the mean years of schooling a person had. I earlier discussed the coding for years of schooling in the 1980 Brazilian census.

The total number of men ages 18-65 in the sample data is 211,063 and 99.6% are identified by the racial classification system in the 1980 census. Of the latter group, 74.6% are white, 23.2% are Afro-Brazilian, and 2.3% are Asian. The mean years of schooling for the sample is 4.93 years, with a great deal of variations among the three color groups; 7.44 years for Asians, 5.3 years for whites, and 3.5 years for Afro-Brazilians. A comparison of the mean years of schooling among the three groups is shown in Table 5.11.

The data also show that the mean years of schooling for men ages 18-65 vary by age, place of residence. For analytical purpose, I divided men into three age groups; they are ages 18-25, ages 26-39, and ages 40-65. It turned out that each of the three age groups consists of about one third of the adult male population in the sample, with the first group slightly underrepresented

(29.9%) and the second group slightly over-represented (36.7%). As expected, the mean years of schooling decreases from younger to older groups, and the mean years of schooling for the oldest group (ages 40-65) is substantially lower than those for the two younger groups. The means for the three groups are described in Table 5.12.

Table 5.11
Mean Years of Schooling for Men Ages 18-65 by Color Group, Metropolitan São Paulo, Brazil (1980)

Color	Mean	Std Dev	Cases	%
Asian	7.44	3.76	4,761	2.3
White	5.30	3.60	156,826	74.6
Afro-Brazilian	3.50	2.79	48,716	23.2
Total	4.93	3.54	210,303	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Table 5.12
Mean Years of Schooling of Men Ages 18-65 by Age Group, Metropolitan São Paulo, Brazil (1980)

Age	Mean	Std Dev	Cases	%
18-25	5.95	3.30	63,038	29.9
26-39	5.16	3.57	77,525	36.7
40-65	3.76	3.37	70,500	33.4
Total	4.93	3.54	211,063	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Place of residence is another important factor in the variation of schooling of men ages 18-65. Urban men, on the average, have 2.33 more years of schooling than rural men. However, since only about 11% of men reside in rural areas, the overall educational level for men is not affected very much by the extremely low educational level of rural men (see Table 5.13).

Table 5.13
Mean Years of Schooling for Men Ages 18-65
by Residence, Metropolitan São Paulo, Brazil (1980)

Residence	Mean	Std Dev	Cases	%
Urban	5.18	3.55	188,141	89.1
Rural	2.85	2.63	22,922	10.9
Total	4.93	3.54	211,063	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

I have shown above (Tables 5.11-5.13) that mean years of schooling for men ages 18-65 vary by color group, age group, place of residence. I will now examine whether the three color groups differ in terms of schooling when age, place of residence and income are controlled separately. If the differences among the three groups disappear when these variables are controlled, we can conclude that differences in educational attainment are mainly caused by these factors. On the other hand, if the people from three color groups who are in the same category still differ from one another, we would need to examine factors other than those examined here.

First of all, the data indicate that age has a uniform effect on the level of education for the three color groups. Younger age groups have more years of schooling than do older age groups, regardless of color. Thus, color

differences remain when age is controlled. For example, in the first age group (ages 18-25), Asians, on average, have 3.05 more years of schooling than whites, who have 1.86 more years of schooling than Afro-Brazilians. The same pattern among the three groups persists in the two older age groups. The ratios of mean years of schooling between Asians and Whites and between Asians and Afro-Brazilians for the three age groups are presented in the last two columns of Table 5.14. These ratios are better indicators of amount of change between two means because they measure relative changes of the two, not merely the absolute increase or decrease in them separately. We see in Table 5.14 that the gap in the mean years of schooling between Asian and white men widens from older to younger ages, and the gap between Asian and Afro-Brazilian men narrows from older to younger ages.

Table 5.14
Mean Years of Schooling for Men of Ages 18-65
by Age and Color, Metropolitan São Paulo, Brazil (1980)

Age	Sample	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
18-25	5.95	9.43	6.38	4.52	1.48	2.09
26-39	5.16	8.37	5.60	3.54	1.49	2.36
40-65	3.76	5.44	4.08	2.26	1.33	2.41
Total	4.93	7.44	5.30	3.50	1.40	2.13

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asian/White, A/AB = Asian/Afro-Brazilian.

When place of residence is controlled, the gap among the three groups in urban areas reduces slightly, but the gap among them in rural areas not

only remains but also widens considerably. The ratio between the mean years of schooling for Asians and that for whites in urban areas decreases slightly from 1.40 before place of residence is controlled to 1.37 after it is controlled. And the ratio between Asians and Afro-Brazilians in urban areas drops from 2.16 before residence is controlled to 2.09 after it is controlled.

On the other hand, the ratio between Asians and whites in rural areas increases from 1.40 before place of residence is controlled to 1.84 after it is controlled. Similarly, the ratio between Asians and Afro-Brazilians in rural areas increases from 2.16 before the control of residence to 2.45 after its control. On the average, urban Asians have 2.09 more years of schooling than urban whites, who in turn have 1.91 more years of schooling than urban Afro-Brazilians. In rural areas, Asians have 2.48 more years of schooling than whites, who have 0.75 more years of schooling than Afro-Brazilians. The color differences by place of residence are described in Table 5.15.

Table 5.15
Mean Years of Schooling for Men Ages 18-65
by Residence and Color, Metropolitan São Paulo, Brazil (1980)

Residence	Sample	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
Urban	5.18	7.67	5.58	3.67	1.37	2.09
Rural	2.84	5.45	2.97	2.22	1.84	2.45
Total	4.93	7.44	5.30	3.50	1.40	2.13

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asian/White, A/AB = Asian/Afro-Brazilian.

When Asians are compared to the other two groups in terms of mean years of schooling, the gap between them widens at the two lower income levels and narrows at the two upper income levels. For example, the ratio between Asians and whites without controlling income is 1.40, while the ratios between them at the first and second income levels are 1.68 and 1.73 respectively. The ratio between Asians and Afro-Brazilians without controlling income is 2.13, whereas the ratio between them at the first and second income levels are 2.69 and 2.19, respectively.

However, the data also show that income does have a positive effect on mean years of schooling for people with an average income of above two minimum wages. The ratios between Asians and whites at the third and fourth income levels are respectively 1.43 and 1.16, compared to 1.40 when income is not controlled, and the ratios between Asians and Afro-Brazilians at these income levels are 1.80 and 1.65, as compared to 2.13 when income is not controlled.

Table 5.16
Mean Years of Schooling for Men Ages 18-65 by Income and Color, Metropolitan São Paulo, Brazil, 1980

Income	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
To 1 MW**	4.14	7.56	4.50	2.81	1.68	2.69
To 2 MW	3.48	6.41	3.70	2.93	1.73	2.19
To 3 MW	4.19	6.33	4.43	3.51	1.43	1.80
Above 3 MW	6.43	7.74	6.68	4.68	1.16	1.65
Total	4.93	7.44	5.30	3.50	1.40	2.13

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.
*A/W = Asian/White, A/AB = Asian/Afro-Brazilian.
**MW = minimum wage

We can also compare directly the mean years of schooling with and without controlling income. When income is not controlled, Asians have 2.14 more years of schooling whites, who have 1.80 more years of schooling than Afro-Brazilians. When income is controlled, Asians lead whites by 3.06 and 2.71 years, and whites lead Afro-Brazilians by 1.69 and 0.77 years at the first and second income levels. At the two upper income levels, Asians lead whites by 1.90 and 1.06 years, and whites lead Afro-Brazilians by 0.92 and 2.0 years (See Table 5.16). This indicates that income is positively associated with the educational level of people who have an average income of above two minimum wages, although it is not so for people with lower income.

Educational Attainment of Women Ages 18-65

The total number of women ages 18-65 in the sample is 211,175, and 99.7% of them are racially identified in the 1980 census. Of those racially identified, whites constitute 76.5%, Afro-Brazilians 21.4%, and Asians 2.1%. The mean years of schooling for the sample is 4.58 years, which is slightlt lower than that of men (4.93 years). Just as with men, there are significant variations in mean years of schooling among women by color group; 6.65 years for Asians, 4.90 years for whites, and 3.23 years for Afro-Brazilians. Table 5.17 illustrates the mean years of schooling for Asians, whites and Afro-Brazilians.

When compared to men of the same color group, women of all three groups have fewer years of schooling as well. Asian women, on average, have 6.65 years of schooling, compared to 7.44 years for Asian men, white women have 4.90 years of schooling, compared to 5.3 years for white men,

and Afro-Brazilian women have 3.23 years of schooling, compared to 3.5 years for Afro-Brazilian men. Note, too, that the ratio between mean years of schooling for men and women of the same color group is approximately the same for all three groups; 1.11 for Asians, 1.08 for whites and 1.08 for Afro-Brazilians. This suggests that the degree of gender differences in terms of schooling is about the same across the three groups (see Figure 5.7).

Table 5.17
Mean Years of Schooling for Women Ages 18-65
by Color Group, Metropolitan São Paulo, Brazil (1980)

Color Group	Mean	STD DEV	Cases	%
Asian	6.65	3.85	4,509	2.1
White	4.90	3.61	160,952	76.5
Afro-Brazilian	3.23	2.88	45,028	21.4
Total	4.58	3.55	210,488	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Women in the sample are also divided into the three age groups (18-25, 26-39, and 40-65 years) as men are for analytical purpose. The general trend here is the same as with the men's data, i.e., younger women have more years of schooling than older women. For instance, women ages 18-25 have an average schooling of 6.05 years, compared to 4.81 years for women ages 26-39 and 3.06 years for women ages 40-65 (see Table 5.18).

Although the mean years of schooling for women in the two older age groups (4.81 and 3.06 years) are lower than those for men of the same age groups (5.16 and 3.76 years), women ages 18-25 have .10 years than do men of the same ages (6.05 vs. 5.95). This indicates that women ages 18-25 are slightly better educated than their male counterparts, although they, as a whole, still

lag behind men in educational attainment. Figure 5.8 compares men and women in terms of mean years of schooling by age group.

Table 5.18
Mean Years of Schooling for Women Ages 18-65 by Age Group, Metropolitan São Paulo, Brazil (1980)

Age	Mean	STD DEV	Cases	%
18-25	6.05	3.39	62,536	29.6
26-39	4.81	3.55	76,422	36.2
40-65	3.06	3.06	72,217	34.2
Total	4.58	3.55	211,175	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Educational level of women also varies a great deal by place of residence. Urban women have much more schooling than their rural counterparts; 4.79 years for urban women, compared to only 2.51 years for rural women. Due to the small proportion of women in rural areas (9.2%), the overall mean years of schooling for women is not affected much by the extremely low mean for rural women, as shown in Table 5.19.

Table 5.19
Mean Years of Schooling for Women Ages 18-65 by Residence, Metropolitan São Paulo, Brazil (1980)

Residence	Mean	STD DEV	Cases	%
Urban	4.79	3.57	191,782	90.8
Rural	2.51	2.60	19,393	9.2
Total	4.58	3.55	211,175	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

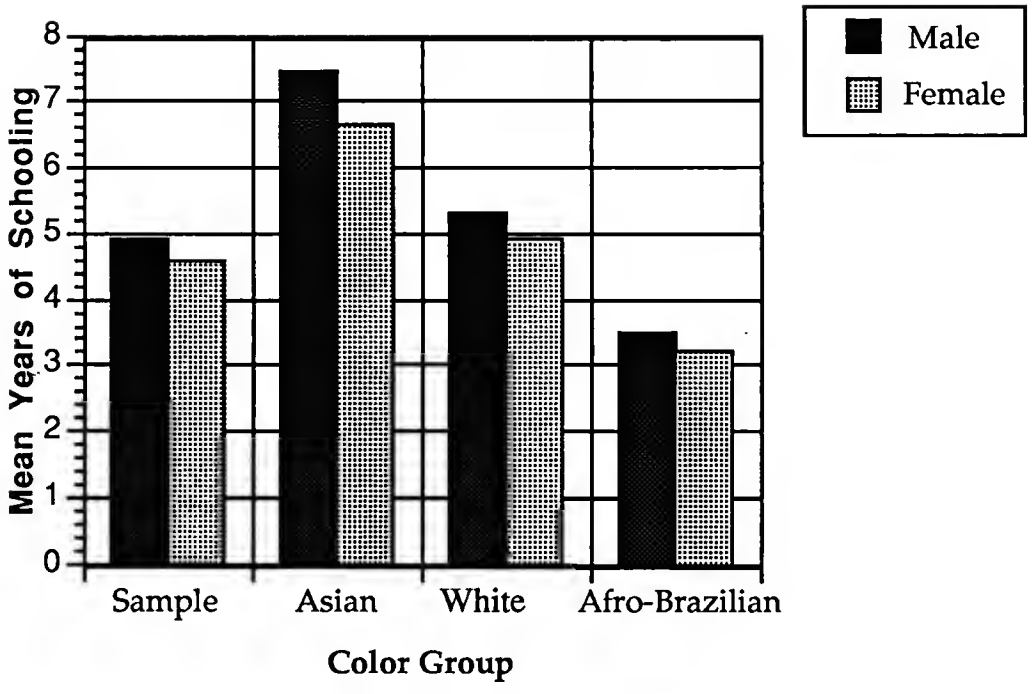

Figure 5.7 Mean Years of Schooling by Sex and Color, Metropolitan São Paulo, Brazil (1980)

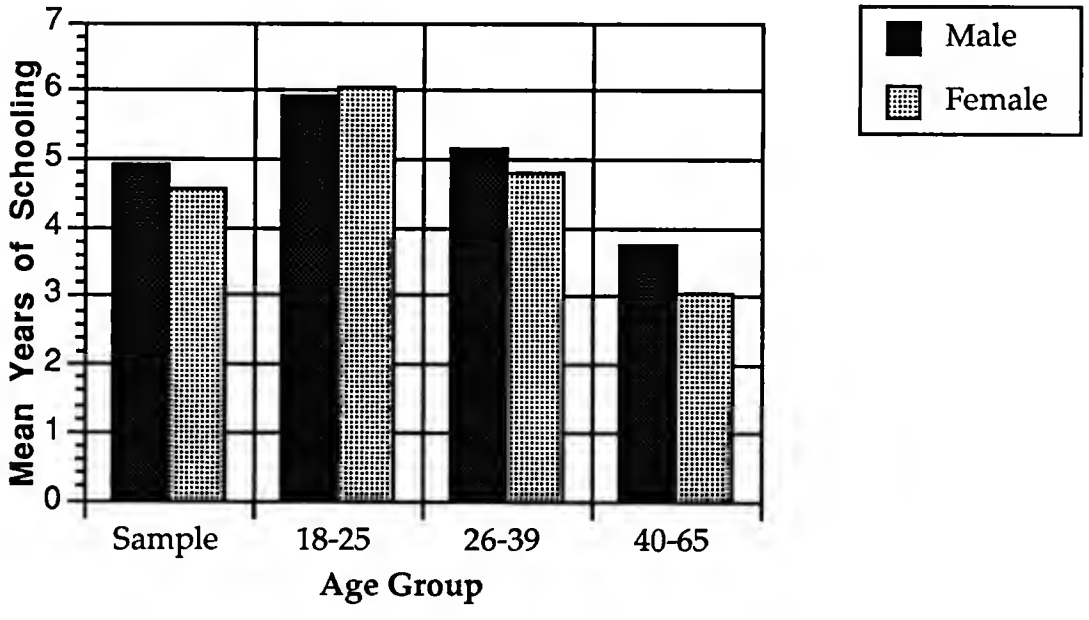

Figure 5.8 Mean Years of Schooling by Sex and Age Group, Metropolitan São Paulo, Brazil (1980)

Gender difference in schooling is also noticeable in both urban and rural areas; 5.18 years for men compared to 4.79 years for women in urban areas, and 2.85 years for men compared to 2.51 years for women in rural areas. The ratio between the means of men and that of women in rural areas (1.90) is slightly bigger than the ratio between the means of men and women in urban areas (1.81), indicating a slightly greater degree of inequality between men and women in rural areas (see Figure 5.9 below).

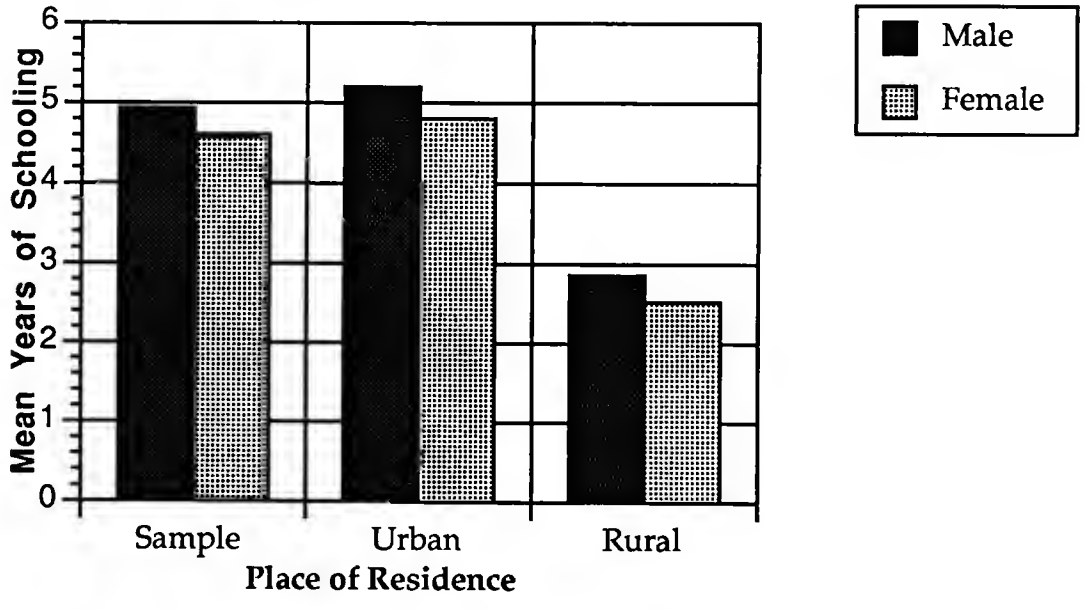

Figure 5.9 Mean Years of Schooling by Sex and Residence, Metropolitan São Paulo, Brazil (1980)

We already know from Tables 5.17-5.19 that there are considerable differences in mean years of schooling for women by color, age and place of residence. Now I will examine whether the differences in schooling among women of the three color groups become smaller or larger when age and residence are controlled.

The data show that the difference in mean years of schooling between Asian and white women is actually bigger at the two younger age groups than the difference between the two when age is not controlled. The overall ratio between the two groups is 1.36 , while the ratios between the two at ages 18-25 and 26-39 are 1.47 and 1.45, respectively. Younger Asian women (those under 40) have made greater progress in educational attainment than white women of the same age groups. However, the ratio between older Asian and white women ages 40-65 (1.24) is lower than the ratio between the two (1.36) when age is not controlled. This shows that the gap between Asian and white women is widening from older to younger ages (see Table 5.20).

Table 5.20
Mean Years of Schooling for Women Ages 18-65
by Age and Color, Metropolitan São Paulo, Brazil (1980)

Age	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
18-25	6.05	9.46	6.45	4.59	1.47	2.06
26-39	4.81	7.55	5.19	3.24	1.45	2.33
40-65	3.06	4.13	3.34	1.67	1.24	2.47
Total	4.58	6.65	4.90	3.23	1.36	2.06

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asian/White, A/AB = Asian/Afro-Brazilian.

When Asian women are compared to Afro-Brazilian women within each age level, there is no change in the gap between the two at the first age level (ages 18-25), and the gap widens at the two older age groups. This pattern is just the opposite of the one between Asian and white women. In other words, the gap in schooling between Asian and Afro-Brazilian women

has been narrowing from generation to generation. The ratio between the mean years of schooling for Asian women ages 40-65 and that for Afro-Brazilian women of the same ages is 2.47 years, whereas the ratio between the two at the second age level reduces to 2.33 years, and the ratio at the youngest age level drops to 2.06 years, which is exactly the ratio between the two before age is controlled. The difference between Asian and Afro-Brazilian women is still much bigger than the one between Asian and white women, but the main issues here are the effect of age on the differences in schooling among the color groups and the general patterns from older to younger age groups.

When place of residence is controlled, the differences between Asians and the other two groups become smaller in urban areas, and bigger in rural areas. Specifically, the ratio between Asian and white women in urban areas is 1.33, compared to 1.36 when residence is not controlled, and the ratio between Asian and Afro-Brazilian women is 2.02, which is slightly lower than 2.06 before residence is controlled. In rural areas, the educational level for Asian women is much higher than those for white and Afro-Brazilian women. For example, rural Asian women, on the average, have 5.03 years of schooling, which is close to 5.12 years for urban white women, and 1.65 years more than that for urban Afro-Brazilian women. In a word, color differences still remain after place of residence is controlled, as shown in Table 5.21.

Finally, let's look at what happens to the color differences in schooling of women when income is controlled. With the exception of the ratio between the mean years of schooling for Asians and that for whites at the second income level, all the ratios between Asians and whites and between Asians and Afro-Brazilians are either smaller than or equal to those ratios among the three color groups before income is controlled. More importantly, the gap between them narrows with the increase of income, indicating a

strong positive correlation between income and schooling. For example, the gap between the mean years of schooling for Asian and white women narrows from 1.44 years at the lowest income level to only 0.38 years at the highest income level.

Table 5.21
Mean Years of Schooling for Women Ages 18-65
by Residence and Color, Metropolitan São Paulo, Brazil (1980)

Residence	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
Urban	4.79	6.83	5.12	3.38	1.33	2.02
Rural	2.51	5.03	2.61	1.91	1.93	2.63
Total	4.58	6.65	4.90	3.23	1.36	2.06

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.
*A/W = Asian/White, A/AB = Asian/Afro-Brazilian.

Table 5.22
Mean Years of Schooling for Women Ages 18-65
by Income and Color, Metropolitan São Paulo, Brazil (1980)

Income	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
To 1 MW*	3.76	5.46	4.02	2.69	1.36	2.03
To 2 MW	4.71	7.25	5.05	3.82	1.44	1.90
To 3 MW	6.64	8.19	6.90	5.41	1.19	1.51
Above 3 MW	8.96	9.46	9.08	7.22	1.04	1.31
Total	4.58	6.65	4.90	3.23	1.36	2.06

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asian/White, A/AB = Asian/Afro-Brazilian.
**MW = minimum wage

The gap between the mean years of schooling for Asian and Afro-Brazilian women have reduced from 2.77 years at the lowest income level to 2.24 years at the highest income level. Although the rate of decrease is very small, it is steady and indicates the increasingly positive correlation between the two. The educational level of Afro-Brazilian women with income of above three minimum wages is still considerably lower than those of Asians and whites, but their average years of schooling has a significant increase of 4.53 years from the lowest to highest income level. Table 5.22 presents a comparison of the mean years of schooling for women of the three color groups with income controlled.

Summary

The data on children show that in Metropolitan São Paulo, Brazil, more than 80% of children ages 8-12 are in school, with peaks (more than 90%) at ages 9 and 10, but the number of children in school decreases from age 13 until it drops to 52.5% at age 16. When children of the three color groups are compared, Asian children have the highest percentage in school, 88.7%, followed by 73.6% for white children and 64.7% for Afro-Brazilian children.

When children of different income, place of residence and parental education are compared separately, there are marked differences; a higher percent of children from higher income levels, urban areas, and with parents who have more years of schooling are in school. In other words, income, urban residency and parental education have positive impact on the school attendance rate of children. A slightly higher percentage of male than female

children are in school (72.3% for males vs. 70.8% for females). When the school attendance rate is measured, controlling for income and place of residence separately, Asian children do better than white children, who do better than Afro-Brazilian children at every age. This indirectly indicates that Asians put more emphasis on education than the other two groups.

The logistic regression results quantitatively show the effects of each of the independent variables examined here on the dependent variable, in-school rate, and the changes in the odds of being in school for a one-unit increase in the independent variable. From ages 6 to 16, the coefficients of all independent variables, except a few of the dummy variables (Asians at ages 6, 8, 10 and 11, and Afro-Brazilians at age 12), are statistically significant. In general, father's and mother education and income have about the same positive effect across ages on whether or not a child is in school. Except at age 6, urban residency has an increasingly more positive effect than does rural residency on in-school rate. In fact, the odds of being in school for urban children increase by a factor of more than 2.0 from ages 11-16. This indicates the great advantages of urban areas over rural areas in terms to access to school. Most importantly, being Asian, compared to being white (the reference group here), increases the odds of being in school at most ages by a factor of more than two and in some cases by as much as a factor of more than five. In contrast, being Afro-Brazilian decreases the odds of being in school at all ages but 12 by a factor of about .20 and in some cases by a factor of more than .30.

The educational attainment of Brazilian men varies a great deal by color, age group and place of residence. The mean years of schooling for Asians is 7.44, compared to 5.3 years for whites and 3.5 years for Afro-Brazilians; the mean years of schooling for the age group 18-25 is 5.95, while

the comparable figures for the age groups 26-39 and 40-65 are 5.16 and 3.76, respectively; urban residents, on average, have 5.18 years of schooling, as opposed to 2.85 years for rural residents.

When age is controlled, the differences in educational attainment among Asians and the other two groups widen a little in most cases; for the age groups 18-25 and 26-39, the ratios between the mean years of schooling for Asians and whites (1.48 and 1.49) are bigger than it is before the control of age (1.40); the same ratios between Asians and Afro-Brazilians for the age groups 26-39 and 40-65 (2.36 and 2.41) are also bigger than it is before the control of age (2.13). This indicates that age is not a causal factor for the color differences in education.

Neither is place of residence a major factor for the color differences in education because the same patterns of differences remain among the three groups in both urban and rural areas. Although there are slight decreases in the ratios between the mean years of schooling for Asians and whites and Asians and Afro-Brazilians in urban areas, there are considerable increases in the same ratios among them in rural areas.

When income is controlled, the color differences in education narrow at the two higher income levels, but they widen at the two lower income levels. This indicates that income is positively correlated with education at higher higher income levels, but not at lower income levels. This is probably because income is most likely the result rather than the cause of educational level.

There are significant variations in the educational attainment of Brazilian women by color, age group and place of residence, just as the case with their men counterparts. The mean years of schooling for Asian women is 6.65 while those for white and Afro-Brazilian women are 4.90 and 3.23,

respectively; the mean years of schooling for the age groups 18-25, 26-39 and 40-65 are, respectively, 6.05, 4.81 and 3.06; urban women, on average, have 4.79 years of schooling, compared to 2.51 years of schooling for rural women; the mean years of schooling for the four income levels are, in ascending order, 3.76, 4.71, 6.64 and 8.96.

Although the educational attainment of women as a whole is lower than that of men and the same holds true within each of the three color groups, women outperform men in a few categories. For instance, the mean years of schooling for women ages 18-25 (6.05 years) is slightly higher than that men of the same age group (5.95 years) and the mean years of schooling for women at all income levels, except the lowest, exceed the corresponding figures for men of the same income levels. However, as more than two thirds of women belong to the lowest income level, their overall educational level (4.58 years) is still lower than that of men (4.93). This reflects the economic status of Brazilian women as well as their educational level.

When age is controlled, the color differences in education still remain for most age groups. For example, the ratio between the mean years of schooling for Asian and white women widens for the two younger age groups, and the ratio between Asian and Afro-Brazilian women widens for the two older age groups. This suggests that the mean years of schooling for both Asian and Afro-Brazilian women have increased at a faster rate than that of white women over the years. When place of residence is controlled, the color differences in education reduce slightly in urban areas, but increase considerably in rural areas, suggesting a minimal role of residence in the color differences in education.

The educational differences among Brazilian women of the three color groups reduce considerably, controlling for income, with one exception. All

the ratios among the three groups, except for the ratio between Asians and whites at the income level of up to two minimum wages, become smaller and smaller with the increase of income. At the highest income level of above three minimum wages, the mean years of schooling for Asian and white women become almost identical (9.46 for Asians and 9.08 for whites), and the ratio between Asian and Afro-Brazilian women reduce to 1.31 from 2.06 before the control of income. In brief, this suggests that the association between income and education, particularly at higher income levels, is greater for women than it is for men in Brazil.

CHAPTER 6
OCCUPATIONAL PROFILE OF ASIANS, WHITES AND AFRO-BRAZILIANS

In this chapter, I examine another key indicator of socioeconomic status, occupational distribution, of men and women ages 18-65 in Metropolitan São Paulo, Brazil. In modern societies, the type of occupation people have is very much dependent upon the level of education they have received, and their income is very much associated with their occupations. Thus, the occupational profile of a social group tells us a great deal about their status vis-a-vis other groups in the society. The main objective of this chapter is to find out if there are any occupational differences among the three color groups, and if there are, whether they are due to some other factors, such as differences in residence and educational level.

In what follows, I describe the mean income of men and women separately because the main focus here is on the color groups and there are vast income differences between men and women in Brazil. The first part of the chapter deals with the occupational distribution of men and the second part deals with that of women, with brief comparisons of the occupational distributions of men and women. In each part, I first describe the occupational distribution of the sample by color, place of residence, age group, educational level and income level, and then compare the occupational distributions of the three color groups by residence, age group, educational and income levels. The findings are summarized at the end of the chapter.

The 1980 Brazilian Census used hundreds of codes for classifying respondent's primary occupation in the twelve months period preceding the census. I have reclassified the occupations into six major categories; 1. managerial/administrative, 2. professional/technical, 3. clerical, 4. transportation/communications, 5. transformative, and 6. unskilled/personal service (See Appendix D for details). The first three categories consist of white collar occupations, and the last three categories blue collar occupations. For comparison and clarity, I list the percentage of blue collar occupations, in addition to the percentages of individual categories, in the tables that follow.

Occupational Profile of Men Ages 18-65

There are a total of 167,294 cases in the sample data for men ages 18-65, of which 99.8%, are racially classified. There are many variations among the three color groups in terms of occupational distribution, as shown in Table 6.1. While 67.4% of the sample have blue collar occupations, only 47.2% of Asians, 63.1% of whites and 83.6% of Afro-Brazilians have blue collar occupations. Furthermore, within the category of white collar occupations, there are proportionally more Asians than whites and Afro-Brazilians who are in the first two categories, i.e., managerial/administrative and professional/technical. For instance, almost 39% of Asians are in these occupations, compared to about 22% of whites and about 7% of Afro-Brazilians. The proportions of Asians and whites who are in the third category, occupations related to clerical work, are about the same (14% and 14.5%), whereas only about 9% of Afro-Brazilians have clerical occupations.

Table 6.1
Occupational Distribution of Men Ages 18-65 by Color Group, Metropolitan São Paulo, Brazil (1980)

Occupation	Total %	Asian %	White %	Afro-B* %	Ratio A/W**	Ratio A/AB**
Managerial/ Administrative	10.5	19.9	12.2	3.3	1.63	6.03
Professional/ Technical	8.8	18.9	10.0	3.9	1.89	4.85
Clerical	13.3	14.0	14.5	9.1	0.97	1.54
Blue Collar* **	**67.3**	**47.2**	**63.1**	**83.7**	**0.75**	**0.56**
Transportation/ Communication	8.3	5.4	8.3	8.6	0.65	0.63
Transformative	35.7	14.5	31.9	50.6	0.45	0.29
Unskilled/ Personal Service	23.3	27.3	22.9	24.5	1.19	1.11
%	100.0	100.0	100.0	100.0		
N of Cases	166,986	4067	124,711	38,208		

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/Whites ratio, A/AB = Asians/Afro-Brazilians ratio
***Blue collar percentages are the sum of transportation/communication, transformative, and unskilled/personal service categories.

Within the broad category of blue collar occupations, the color differences are most obvious in the distributions of transformative and unskilled/personal service occupations. On the one hand, there are proportionally more Afro-Brazilians (50.6%) than whites (31.9%) and Asians (14.5%) who are in transformaitve occupations. On the other hand, higher percentage of Asians (27.3%) than whites (22.9%) and Afro-Brazilians (24.5%) are classified as being engaged in unskilled/personal service occupations.

Further cross tabulation of each occupation in the category of unskilled/personal service by color group reveals that Asians differ from the other two in specific occupational concentration. Table 6.2 lists the top five individual occupations within the category of unskilled/personal service for the three color groups. The number one occupation for Asians (29.2%) is "self-employed small business", while the number one occupation for whites (35.1%) and Afro-Brazilians (45.6%) is "other jobs in agriculture and fishing." The high concentration of Asian Brazilians in small business has a striking similarity with the case of Japanese immigrants in the United States. Asians are also heavily concentrated in the occupations of "autonomous producers in agriculture and fishing " (28.7%), "mobile sellers" (people who go from market to market to sell things) (13.8%) and "other jobs in agriculture and fishing" (13.4%).

Table 6.2
Top Five Occupations in the Category of Unskilled/Personal Service by Color Group, Metropolitan São Paulo, Brazil (1980)

Occupation	Asians %	Whites %	Afro-Brazilians %
Self-employed small business	29.2 (1)	13.5 (3)	5.2 (5)
Autonomous producers in agriculture & fishing	28.7 (2)	16.3 (2)	6.6 (4)
Mobile sellers	13.8 (3)	1.8	1.4
Other jobs in agr./fishing	13.4 (4)	35.5 (1)	45.6 (1)
Laundry/ironing	2.6 (5)	0.3	0.5
Domestic security guards	0.4	4.5 (5)	7.2 (3)
Domestic cleaning service	0.5	6.0 (4)	8.9 (2)

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

In contrast, the second, third and fourth most popular occupations for whites are "autonomous producers in agriculture and fishing" (16.3%), "self-employed small business (13.5%) and "domestic cleaning service" (6.0%), and those for Afro-Brazilians are "domestic cleaning services" (8.9%), "domestic security guards" (7.2%) and "autonomous producers in agriculture and fishing" (6.6%). Another striking difference between Asians and the other two groups is that a considerable number of Asians are in the "laundry and ironing business," while a considerable number of whites and Afro-Brazilians are in the "domestic security and cleaning business."

The occupational distribution of men varies a great deal by residence, as shown in Table 6.3. The percentage of white collar occupations is much higher for urban residents than it is for urban residents, and the distribution of blue collar occupations is much higher in rural areas than it is urban areas. Specifically, of urban residents, 11% have managerial/administrative occupations, 9.9% have professional/technical occupations, and 14.8% have clerical occupations, compared to the corresponding figures for rural residents, 6.9%, 1.1% and 2.3%. Clerical is the most popular white collar occupation for urban residents, while managerial/administrative is the most popular white collar occupation among rural residents. However, both the percentage and the absolute number of people who are managers and administrators are far greater in urban areas than in rural areas (see Table 6.3).

Within blue collar occupations, the highest percentage of urban people (38.7%) have transformative occupations, followed by those occupations in unskilled/personal service (16.7%) and in transportation/communications (8.8%). In comparison, the highest percentage of rural people (71.1%) have unskilled/personal service occupations, followed by transformative (14.1%) and transportation/communications (4.5%).

Table 6.3
Occupational Distribution of Men Ages 18-65 by Residence,
Metropolitan São Paulo, Brazil (1980)

Occupation	Total %	Urban %	Rural %	U/R Ratio*
Managerial/ Administrative	10.5	11.0	6.9	1.59
Professional/ Technical	8.8	9.9	1.1	9.00
Clerical	13.3	14.8	2.3	6.43
Blue Collar	**67.4**	**64.2**	**89.7**	**0.72**
Transportation/ Communication	8.3	8.8	4.5	1.96
Transformative	35.8	38.7	14.1	2.74
Unskilled/ Personal Service	23.3	16.7	71.1	0.23
%	100.0	100.0	100.0	
N of Cases	167,294	146,957	20,337	

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*U/R Ratio = ratio between the percentages of urban and rural areas.

There are also differences in the occupational distribution of men by age group. These differences are, however, not at the broad level of white collar vs. blue collar, but at the level of the six major occupational categories used in this study. If we look at the percentages of men with blue collar occupations across the three age groups in Table 6.4, we see that they are about the same; 67.4% for men ages 18-25, 66.3% for men ages 26-39, and 68.7% for men ages 40-65. However, within white collar occupations, the three age groups differ considerably due to factors closely related to age, such as education and experience. For example, a higher percentage of the youngest group have clerical jobs, and a higher percentage of the oldest group have

managerial/administrative jobs. The middle-age group is almost evenly distributed among the three occupations. The age differences are less pronounced for blue collar workers, though they are noticeable, especially between men below and above 40 years of age: A higher percentage of people under 40 have transformative occupations, and a higher percentage of people above 40 have occupations in the category of unskilled/personal service. To some degree, this reflects the requirements and demands of different occupations in the labor force.

Table 6.4
Occupational Distribution of Men Ages 18-65 by Age Group, Metropolitan São Paulo, Brazil (1980)

Occupation	Total %	18-25 %	26-39 %	40-65 %
Managerial/ Administrative	10.5	4.1	11.7	15.0
Professional/ Technical	8.8	6.4	10.9	8.4
Clerical	13.3	22.1	11.1	7.9
Blue Collar	**67.4**	**67.4**	**66.3**	**68.7**
Transportation/ Communication	8.3	6.1	9.9	8.3
Transformative	35.8	41.1	37.3	28.9
Unskilled/ Personal Service	23.3	20.3	19.1	31.6
%	100.0	100.0	100.0	100.0
N of Cases	167,294	48,176	66,693	52,425

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Naturally, occupational distribution is highly correlated with average income: White collar jobs produce higher wages and blue collar jobs produce

less money. Therefore, people with higher income are expected to be concentrated in white collar occupations, especially in the first two categories, managerial/administrative and professional/technical, and people with lower income are expected to be concentrated in blue collar occupations, especially in the category of unskilled/personal service.

The data show exactly this relation between occupation and income (see Table 6.5). Of those who are in the first three income groups (1-3 minimum wages), very few are in the first two categories of white collar occupations. In other words, the majority of people who belong to these two occupational categories earn an income of above three minimum wages. The percentage of clerical workers increases from 6.6% for the first income group, to 12.3% for the second income group, to 15.2% for the third income group, and then decreases slightly to 14.1% for the fourth income group. This suggests that clerical jobs are most popular among people who have an average income of 2-3 minimum wages, and they tend to become less common among people with even higher wages.

The percentage of blue collar occupations decreases with the increase of average income; 90.3% for the first income group, 83.7% for the second income group, 79.1% for the third income group, and 49.9% for the fourth income group. The contrast between the first three and the last income group is particularly sharp. In other words, while 80-90% of people with an average income of less three minimum wages are blue collar workers, less than 50% of people who have an average income of above three minimum wages are blue collar workers.

Within blue collar occupations, the percentage of people in unskilled/personal service varies the most across income levels. It drops from 66.2% at the first income level to 34.3% at the second income level, to

17.2% at the third level, and finally to 12.6% at the fourth income level. This indicates the plain fact that occupations in this category are least desirable in terms of monetary reward. On the other hand, the high concentration of transformative occupations at the second and third income level (42.3% and 48.1% respectively) shows that people in these occupations are considerably better off than those in the category of unskilled/personal service. They are still blue collar jobs, however, and tend to be less popular among people whose average income is above three minimum wages (only 28.9%). Table 6.5 describes the occupational distribution of men ages 18-65 by income group.

Table 6.5
Occupational Distribution of Men Ages 18-65 by Income, Metropolitan São Paulo, Brazil (1980)

Occupation	Total %	1MW* %	2MW %	3MW %	3+MW %
Managerial/ Administrative	10.5	1.3	2.0	3.8	20.0
Professional/ Technical	8.8	1.7	2.0	3.9	16.0
Clerical	13.3	6.6	12.3	15.2	14.1
Blue Collar	**67.4**	**90.3**	**83.7**	**79.1**	**49.9**
Transportation/ Communication	8.3	2.4	7.0	11.7	8.5
Transformative	35.7	21.7	42.3	48.1	28.9
Unskilled/ Personal Service	23.3	66.2	34.3	17.2	12.6
%	100.0	100.0	100.0	100.0	100.0
N of Cases	167,048	12,594	44,591	33,243	76,619

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*MW = minimum wage

Educational attainment, as measured by mean years of schooling, is also closely associated with the occupational distribution of men ages 18-65. In general, average years of schooling is positively correlated with the percentage of white collar workers and negatively correlated with the percentage of blue collar occupations. In other words, as the average years of schooling go up, the percentage of white collar occupations increases and the percentage of blue collar occupations decreases.

First of all, there are dramatic increases in the percentage of white collar occupations and sharp decreases in the percentage of blue collar occupations from lower to higher educational levels, especially at higher levels of 5-8 years, 9-11 years and 12 or more years of schooling. For example, 93.8% of men who have no schooling and 83.6% of men who have 1-4 years of schooling are blue collar workers, compared to 60% of men who have 5-8 years of schooling, 28% for those who have 9-11 years and only 6.3% for those who have 12 or more years of schooling have blue collar occupations.

Within the category of white collar occupations, the first two, managerial/administrative and professional/technical, have a positive and linear correlation with educational level, while the third one, clerical, has a positive, but nonlinear correlation with educational level. The percentages of the first two categories go up with increasing average years of schooling and are most popular among people with 12 or more years of schooling. In contrast, the percentage of clerical occupations reaches its highest point (35.1%) at the level of 9-11 years of schooling and then drops back to 15.8% at the level of 12 or more years of schooling. Thus, people with 9-11 years of schooling are more likely to have clerical occupations than any other educational groups.

Table 6.6
Occupational Distribution of Men Ages 18-65
by Education, Metropolitan São Paulo, Brazil (1980)

Occupation	Total	0	1-4	5-8	9-11	12+ (years)
	%	%	%	%	%	%
Managerial/ Administrative	10.5	2.9	6.8	10.9	19.7	29.6
Professional/ Technical	8.8	0.8	2.8	6.3	17.3	48.2
Clerical	13.2	2.5	6.9	22.8	35.1	15.8
Blue Collar	**67.5**	**93.8**	**83.6**	**60.0**	**28.0**	**6.3**
Transportation/ Communication	8.3	4.2	11.9	8.6	2.7	0.3
Transformative	35.8	40.4	44.2	37.7	16.2	2.7
Unskilled/Personal Service	23.4	49.2	27.5	13.7	9.1	3.3
%	100.0	100.0	100.0	100.0	100.0	100.0
N of Cases	166,679	19,805	83,483	29,957	19,024	14,410

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

For people with less than 9 years of schooling, transformative occupations are most prevalent; 40.4% for men with no schooling, 44.2% for men with 1-4 years of schooling, 37.7% for men with 5-8 years of schooling. Occupations in the category of unskilled/personal service are highly concentrated among people with less than 5 years of schooling: 49.2% for people with no schooling at all and 27.5% for people with 1-4 years of schooling. Accordingly, the percentage of unskilled/personal service occupations decreases sharply at higher educational levels; 13.7% for people with 5-8 years of schooling, 9.1% for people with 9-11 years of schooling and only 3.3% for people with 12 or more years of schooling. In contrast, occupations in transportation/communications are more prevalent among

people with 1-4 years of schooling (11.9%) and those with 5-8 years of schooling (8.6%) than among those with less or more schooling.

In Table 6.1 and Tables 6.3-6.6, I have described the variances in occupational distribution of men ages 18-65 by color group, place of residence, age, income group and educational level. In the following, I will examine if the color differences in occupational distribution still remain when these independent variables are controlled. If most of the color differences disappear after controlling for these variables, we could conclude that they are largely due to factors other than color. Otherwise, it is safe to say to that color, along with the other independent variables examined here, does play a role in the uneven occupational distribution of men ages 18-65.

Let's first look at the occupational distribution of the three color groups when place of residence is controlled, i.e., in urban and rural areas separately. The data show that in urban areas, while there are slight decreases in the proportion of blue collar occupations for all color groups, the color differences still remain much the same. Compared to urban areas, the proportion of blue collar occupations have significant increases for all color groups and the color differences have narrowed somewhat in rural areas, but the three groups are still significantly different from one another. Table 6.7 compares the proportions of white vs. blue collar occupations of men in the entire sample, and in urban and rural areas separately.

Table 6.8 describes the occupational distribution of the three color group in greater detail. In urban areas, Asians exceed whites and Afro-Brazilians by a large margin in the first two categories of white collar occupations and whites exceed the other two groups in clerical occupations. Specifically, the ratio between the proportions of Asians and whites who have managerial/administrative occupations is 1.50, and the ratio between Asians

and Afro-Brazilians is 5.79. In the category of professional/technical occupations, the ratio between Asians and whites is 1.84, and the ratio between Asians and Afro-Brazilians is 4.79. However, in the category of clerical occupations, the percentage of whites (16.2%) exceeds that of Asians (15.1%) by 1.1% and that of Afro-Brazilians (10.2%) by 6%. On the other hand, Afro-Brazilians lead the other two groups in the first two categories of blue collar occupations, and Asians have the highest percentage in the category of unskilled/personal service. It is worth noting that as many as 55.1% of Afro-Brazilians and 34.5% of whites are engaged in transformative occupations, and as many as 23.3% of Asians have unskilled/personal service occupations. The high concentration of urban Asians in this category is understandable since it includes such occupations as "self-employed small business people," "autonomous producers in agriculture and fishing," and "mobile sellers." As shown in Table 6.2, over 70% of Asians who have blue collar occupations belong to one of the above three occupations.

Table 6.7
A Comparison of White vs. Blue Collar Occupations of Men by Residence and Color, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	Asian %	White %	Afro-Brazilian %
White Collar				
Total	32.6	52.8	36.9	16.4
Urban	35.8	55.6	40.5	17.9
Rural	10.3	29.0	11.1	6.0
Blue Collar				
Total	67.4	47.2	63.1	83.6
Urban	64.2	44.4	59.5	82.1
Rural	89.7	71.0	88.9	94.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Table 6.8
Occupational Distribution of Men Ages 18-65
by Residence and Color, Metropolitan São Paulo, Brazil (1980)

Residence	Sample %	Asian %	White %	AB* %	Ratio A/W**	Ratio A/AB**
Urban						
Managerial/ Administrative	11.0	19.7	13.1	3.4	1.50	5.79
Professional/ Technical	9.9	20.6	11.2	4.3	1.84	4.79
Clerical	14.8	15.1	16.2	10.2	0.93	1.48
Blue Collar	**64.2**	**44.4**	**59.5**	**82.1**	**0.75**	**0.54**
Transportation/ Communication	8.8	5.7	8.8	9.2	0.65	0.62
Transformative	38.7	15.4	34.5	55.1	0.45	0.28
Unskilled/ Personal Service	16.7	23.3	16.2	17.8	1.44	1.31
Total	100.0	100.0	100.0	100.0		
Rural						
Managerial/ Administrative	6.9	21.5	7.8	2.9	2.76	7.41
Professional/ Technical	1.1	3.7	1.1	0.9	3.36	4.11
Clerical	2.3	3.7	2.3	2.2	1.61	1.68
Blue Collar	**89.7**	**71.0**	**88.9**	**94.0**	**0.79**	**0.76**
Transportation/ Communication	4.5	2.2	4.6	4.5	0.48	0.49
Transformative	14.1	5.6	12.5	19.8	0.45	0.28
Unskilled/ Personal Service	71.1	63.2	71.8	69.7	0.88	0.91
Total	100.0	100.0	100.0	100.0		

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*AB = Afro-Brazilians
**A/W = Asians/whites, A/AB = Asians/Afro-Brazilians

In rural areas, Asians lead the other two groups in every category of white collar occupations, but the most striking difference among them is in the percentage of managerial/administrative occupations. For instance, as many as 21.5% of rural Asians have occupations in this category, compared to only 7.8% for whites and 2.9% for Afro-Brazilians. On the other hand, unlike in urban areas, the percentage of Asians who are in the category of unskilled/personal service (63.2%) is the lowest, compared to the corresponding figures for whites and Afro-Brazilians, 71.8% and 69.7%.

When age is controlled, the color differences in some occupational categories narrow considerably within the same age group, indicating the important role of age in occupational distribution. Meanwhile, the data also tell us that age alone can only explain some of the vast variations among the three color groups. If we look at the proportions of white vs. blue collar occupations in different age groups, we see different patterns for the three color groups (see Table 6.9): For both Asians and whites, the age group of 26-39 years old has the highest percentage of white collar occupations (61.1% for Asians and 38.3% for whites), while for Afro-Brazilians, it is the age group of 18-25 years old that has the highest percentage of white collar occupations (19.5%). In other words, the proportion of white collar occupations increases from the first age group to the second age group and then decreases for the third age group for Asians and whites, whereas it decreases from younger to older age groups for Afro-Brazilians. Obviously, the distribution of blue collar occupations for the three groups has the opposite pattern.

Now let's look at the occupational distribution for the three age groups one by one (see Table 6.10). For the age group of 18-25 years old, clerical occupations account for the highest percentage of Asians (33.3%), while transformative occupations account for the highest percentage for whites

(37.1%) and Afro-Brazilians (53.3%). Another striking difference between Asians and the other two groups is the high concentration of Asians in the category of professional and technical occupations (19.4%), as opposed to only 7.3% for whites and 3.1% for Afro-Brazilians. This is particularly significant, considering the age range (18-25 years) of this group. It shows that Asians, as a group, have a much better start in occupation, mainly due to their higher educational attainment. When it comes to unskilled/personal service occupations, the three groups have about the same percentages (22% for Asians, 21.5% for Afro-Brazilians and 19.8% for whites).

Table 6.9
A Comparison of White vs. Blue Collar Occupations of Men by Age and Color, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	Asian %	White %	Afro-Brazilian %
White Collar				
Total	32.6	52.8	36.9	16.3
18-25	32.6	58.4	36.8	19.5
26-39	33.7	61.1	38.3	16.2
40-65	56.8	42.2	35.4	12.6
Blue Collar				
Total	67.4	47.2	63.1	83.7
18-25	67.4	41.6	63.2	80.5
26-39	66.3	38.9	61.7	83.8
40-65	43.2	57.8	64.6	87.4

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

For the age group of 26-39, the primary occupation for Asians is not clerical any more, but professional/technical (26.3%), which is closely followed by managerial/administrative (22.2%), while the primary occupations for whites and Afro-Brazilians are still transformative (32.8% for whites and 54.1% for Afro-Brazilians). In other words, almost half of Asians

in this age group have occupations in either managerial/administrative or professional/technical, while only 26% of whites and 8.9% of Afro-Brazilians do so. This shows the success of Asians in this age group in terms of upward mobility through occupational recruitment. On the other hand, the color differences in the proportions of clerical occupations and unskilled/personal service occupations reduce further, even becoming almost identical in some cases. For example, 12.5% of Asians and 12.3% of whites have clerical occupations, and the range of difference in the percentage of unskilled/personal service occupations for all three groups is only 0.4%.

For the age group of 40-65 years old, the difference between Asians and whites in almost all categories diminishes a great deal, while the difference between Asians and Afro-Brazilians diminishes slightly in most categories but widens in a few categories. For instance, while the percentage of Asians who have managerial/administrative occupations increases a mere 1.4% from the age group of 26-39 to the age group of 40-65, the percentage of whites with the same occupations increases 3.5% from 13.7% to 17.2%. Although the percentages of professional/technical occupations for both Asians and whites drop from the preceding age group, the gap between them narrows considerably due to a greater drop on the part of Asians. For example, the proportion of Asians in this category drops drastically by more than 50% from 26.3% at the previous age group to only 11.2% at this age group, while the proportion of whites decreases moderately from 12.3% to 9.4%. Similar changes happen to the percentages of clerical occupations for Asians and whites, only this time whites exceed Asians in the proportions of clerical occupations (7.4% for Asians vs. 8.7% for whites). The gap between Asians and whites narrows in two of the three blue collar occupations, and widens in the category of unskilled/personal service.

Table 6. 10
Occupational Distribution of Men Ages 18-65
by Age and Color, Metropolitan São Paulo, Brazil (1980)

Age Group	Sample	Asian	White	Afro-B*	A/W**	A/AB**
Ages 18-25	%	%	%	%		
Managerial/ Administrative	4.1	5.8	5.0	1.5	1.16	3.87
Professional/ Technical	6.4	19.4	7.3	3.1	2.66	6.26
Clerical	22.1	33.3	24.5	14.9	1.36	2.23
Blue Collar	**67.5**	**41.6**	**63.2**	**80.5**	**0.66**	**0.52**
Transportation/ Communications	6.1	2.3	6.3	5.7	0.37	0.40
Transformative	41.1	17.3	37.1	53.3	0.47	0.32
Unskilled/Personal Service	20.3	22.0	19.8	21.5	1.11	1.02
Ages 26-39						
Managerial/ Administrative	11.7	22.2	13.7	4.1	1.62	5.41
Professional/ Technical	10.9	26.3	12.3	4.6	2.14	5.72
Clerical	11.1	12.5	12.3	7.4	1.02	1.69
Blue Collar	**66.3**	**38.9**	**61.7**	**83.8**	**0.63**	**0.46**
Transportation/ Communications	9.9	5.0	9.9	10.6	0.51	0.47
Transformative	37.3	14.5	32.8	54.1	0.44	0.27
Unskilled/Personal Service	19.1	19.4	19.0	19.1	1.02	1.02
Ages 40-65						
Managerial/ Administrative	15.0	23.6	17.2	4.4	1.37	5.36
Professional/ Technical	8.4	11.2	9.4	3.6	1.19	3.11
Clerical	7.9	7.4	8.7	4.6	0.85	0.66
Blue Collar	**43.2**	**57.8**	**64.6**	**87.4**	**0.89**	**0.66**
Transportation/ Communications	8.3	7.1	8.1	9.2	0.88	0.77
Transformative	28.9	13.1	26.3	41.9	0.50	0.31
Unskilled/Personal Service	31.6	37.6	30.2	36.4	1.25	1.03

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*AB = Afro-Brazilians
**A/W = Asians/whites ratio, A/AB = Asians/Afro-Brazilians ratio

When Asians and Afro-Brazilians are compared, the difference between them in terms of the distribution of white vs. blue collar occupations is the smallest in the age group of 40-65 and the biggest in the age group of 26-39. If we look at the distribution of the first two categories of white collar occupations for the two groups, we find the same result, i.e. the gap between Asians and Afro-Brazilians is slightly smaller in the age group of 40-65 than in the other two age groups (see Table 6.10).

When income is controlled, the difference in occupational distribution between Asians and whites becomes much smaller at the two ends of income levels, and larger at the two middle income levels (see Table 6.11). This can be seen from both the actual percentages and the ratio of the percentages of Asians vs. whites who have blue collar occupations at the four income levels. For instance, at the income level of up to one minimum wage, 85.1% of Asians and 89.1% of whites have blue collar occupations. These percentages translate into a ratio of 0.96 between Asians and whites, indicating a high degree of similarity between the two. At the income level of above three minimum wages, 40.6% of Asians and 46.4% of whites have blue collar occupations, which results in a ratio of 0.88, also a high degree of similarity.

On the other hand, at the two middle income levels, the ratios between the two are 0.81 and 0.80, respectively, which are still pretty high but lower than the previous rates. When Asians and Afro-Brazilians are compared, the difference between them tend to become larger in most categories as income grows. For example, the ratios between these two groups in terms of the percentage of blue collar occupations from lower to higher income levels are 0.91, 0.74, 0.71 and 0.56 (see Table 6.11).

Table 6.11
Occupational Distribution of Men Ages 18-65
by Income and Color, Metropolitan São Paulo, Brazil (1980)

Income Level	Sample	Asian	White	AB*	A/W**	A/AB**
One MW	%	%	%	%		
Man/Adm	1.3	1.4	1.6	0.6	0.88	2.33
Prof/Tech	1.7	4.4	2.0	1.1	2.20	4.00
Clerical	6.6	9.1	7.4	4.7	1.23	1.94
Blue Collar	**90.3**	**85.1**	**89.1**	**93.5**	**0.96**	**0.91**
Trans/Com	2.4	2.2	2.5	2.1	0.88	1.05
Transform	21.7	15.4	19.3	27.8	0.80	0.55
Unskilled	66.2	67.5	67.3	63.6	1.00	1.06
Two MW						
Man/Adm	2.0	3.5	2.4	1.1	1.46	3.18
Prof/Tech	2.0	6.4	2.2	1.4	2.91	4.57
Clerical	12.3	24.1	13.9	8.5	1.73	2.84
Blue Collar	**83.6**	**66.0**	**81.5**	**88.9**	**0.81**	**0.74**
Trans/Com	7.0	5.8	7.6	5.9	0.76	0.98
Transform	42.3	25.1	38.4	51.2	0.65	0.49
Unskilled	34.3	35.1	35.5	31.8	0.99	1.10
Three MW						
Man/Adm	3.8	8.9	4.4	2.2	2.02	4.05
Prof/Tech	3.9	7.3	4.2	2.9	1.74	2.52
Clerical	15.2	23.9	16.9	10.5	1.41	2.28
Blue Collar	**77.0**	**59.8**	**74.4**	**84.3**	**0.80**	**0.71**
Trans/Com	11.7	9.1	12.1	10.9	0.75	0.83
Transform	48.1	22.6	44.2	58.8	0.51	0.38
Unskilled	17.2	28.1	18.1	14.6	1.55	1.92
Above Three MW						
Man/Adm	20.0	24.8	21.8	8.1	1.14	3.06
Prof/Tech	16.0	23.1	16.9	8.7	1.37	2.66
Clerical	14.1	11.6	14.9	10.2	0.78	1.14
Blue Collar	**50.0**	**40.6**	**46.4**	**73.0**	**0.88**	**0.56**
Trans/Com	8.5	5.0	8.1	12.2	0.62	0.41
Transform	28.9	11.8	25.9	50.3	0.46	0.23
Unskilled	12.6	23.8	12.4	10.5	1.92	2.27

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*AB = Afro-Brazilians
**A/W = Asians/whites ratio, A/AB = Asians/Afro-Brazilians ratio

As for the distributions of the six major occupations for the three color groups, they exhibit different patterns at various income levels. In other words, some occupations vary very little across color groups at certain income levels and some vary a great deal. For instance, at the first two income levels, the three color groups have very similar distributions of occupations of transportation/communications and unskilled and personal service (see Table 6.11). At the third income level, they also have very similar proportions of transportation and communications occupations; 9.1% for Asians, 12.1% for whites and 10.9% for Afro-Brazilians. Furthermore, Asians and whites are very similar in the proportion of occupations in managerial/administrative at the lowest and highest income levels. On the other hand, Asians are far too over-represented in professional/technical occupations at all income levels and far too under-represented in transformative occupations than the other two groups (see Table 6.11).

When educational level is controlled, the differences among the three color group in most occupational categories reduce considerably, suggesting a strong positive association between education and occupational distribution. First of all, the gap among the three group in the proportion of professional/technical, transportation/communications and unskilled/personal service occupations has become much smaller within the same educational level, as shown in Table 6.12.

For those with no schooling at all, almost the same percentage of whites (0.7%) and Afro-Brazilians (0.8%) have professional/technical occupations. Although Asians fare a little better in this regard, with only 1.6%, the extremely low percentages for all groups show that professional/technical occupations require a much higher level of education, and the differences in these occupations are largely due to varying degrees of

education, rather than to race or color. The distribution of transportation/communications occupations for the three groups at this educational level are also very close, 5.1% for Asians, 4.5% for whites and 3.7% for Afro-Brazilians. These low percentages for all groups suggests again that education may be a major factor here. Another similarity between Asians and whites is that almost equal percentages of each group (53.2% of Asians and 52.7% of whites) have occupations in the category of unskilled/personal service.

At the second educational level (1-4 years of schooling), the gaps in the ratio of blue collar occupations among the three groups reduce slightly from what they are at the previous educational level; the ratio between Asians and whites is 0.88 and the ratio between Asians and Afro-Brazilians is 0.81. Again, the three groups have almost the same percentage of people whose occupations are in transportation and communications; 10.6% for Asians, 12.2% for whites and 11.1% for Afro-Brazilians. The gaps among them in professional/technical occupations also narrow from the previous level; 2.7% for Asians, 2.9% for whites and 2.4% for Afro-Brazilians. In addition, about the same percentage of Asians (7.2%) and whites (7.4%) have clerical occupations. Meanwhile, Asians continue to lead the other two by a big margin in the categories of managerial/administrative (18% for Asians vs. 8% for whites and 2.8% for Afro-Brazilians) and unskilled/personal service occupations (43.4% for Asians vs. 28.7% for whites and 23.3% for Afro-Brazilians).

At the educational level of 5-8 years of schooling, the gaps in the ratio of blue collar occupations among the three groups, especially the ratio between Asians and whites, continue to drop from the second level. As at the two previous levels, about the same proportion of people from all three

groups have transportation/communications occupations. Furthermore, Asians and whites have become very similar in their distribution of managerial/administrative and professional/technical occupations, indicating a strong effect of education for these two groups. Although the gap between Asians and Afro-Brazilians still exists in most categories, the gap between them has narrowed considerably in such categories as clerical and unskilled/personal service.

There are dramatic reductions in the percentage of people who have blue collar occupations for all groups at the educational level of 9-11 years of schooling. Specifically, 26.2% of whites, 36.2% of Asians and 39.4% of Afro-Brazilians now have blue collar occupations, compared to 50-70% at the previous educational level. This is a clear indication of the impact of increased years of schooling on the occupational distribution of all three groups. Furthermore, for the first time, the percentage of managerial/administrative occupations for whites (21%) surpasses that of Asians (20.4%), and the percentage of clerical occupations for Afro-Brazilians (35.8%) surpasses that of whites (35.6%). The occupational distribution of Asians and whites continue to become very much alike, except in the categories of clerical and unskilled/personal service.

At the educational level of 12 or more years of schooling, the percentage of blue collar occupations further drops to less than 10% for Asians and Afro-Brazilians, and less than 6% for whites. On the other hand, there is a tremendous gain for whites and Afro-Brazilians in the percentage of managerial/administrative occupations and marked increases for all three groups in the percentage of professional/technical occupations. For instance, the percentage of managerial/administrative occupations for whites increases by more than 8% from 21% to 30.4%, the same percentage for Afro-Brazilians

increases by more than 10% from 8.3% to 19.1%, and the percentage for Asians increases by 5% from 20.4% to 25.5%. Similarly, the percentage of professional/technical occupations for the three groups jumps by more than 20-30%, resulting in 51.9% for Asians, 40% for whites and 47.2% for Afro-Brazilians. It is particularly important to point out that among people with 12 or more years of schooling, there are proportionally more Afro-Brazilians than whites who have professional/technical occupations. This again demonstrates that education has the most positive effect on the distribution of professional/technical occupations. In contrast, the same amount of increase in education results in less gain for Asians. This may have to do with their relatively high concentration in these occupations to start with at lower educational levels.

In sum, controlling for education has reduced the color differences in occupational distribution to a great extent, but there are still visible differences, especially in the managerial/administrative and professional/technical categories occupations. Meanwhile, although education level is positively correlated with white collar occupations and negatively correlated with blue collar occupations, its degree of impact on different groups is different in some cases. For instance, while the proportion of whites and Afro-Brazilians with managerial/administrative occupations almost doubles at each higher educational level, the increase of Asians in this category at each higher educational level is much less pronounced, and it even decreases at one level (5-8 years). In other words, increase in education has more positive effect on whites and Afro-Brazilians than on Asians as far as the distribution of managerial/administrative occupations is concerned.

Second, the data show that education is most closely associated with the distribution of professional/technical occupations, and seems to have a

uniform positive effect on all three groups. This can be seen in the amount of increases in the percentage of professional/technical occupations for each of the three groups at all educational levels in Table 6.12. Third, the percentages of transportation/communications occupations for all groups are very similar, when educational level is controlled, suggesting that these occupations have more to do with education than with race or color. Fourth, the percentages of whites and Afro-Brazilians with clerical occupations are much higher than that of Asians at the levels of more than four years of schooling. Finally, the main difference in the distribution of blue collar occupations between Asians on the one hand and whites and Afro-Brazilians on the other is that proportionally higher percentages of Asians have unskilled/personal service occupations than do the others, and proportionally higher percentages of whites and Afro-Brazilians have transformative occupations than do Asians. Therefore, we could conclude that with the control of education, occupational differences among the three groups diminish greatly, and whites and Afro-Brazilians are very similar, especially at higher educational levels, but Asians continue to be overrpresented in managerial/ administrative occupations at most educational levels.

Table 6.12
Occupational Distribution of Men Ages 18-65
by Education and Color, Metropolitan São Paulo, Brazil (1980)

Years of Schooling	Sample	Asian	White	AB	A/W	A/AB
Zero Years	%	%	%	%		
Man/Adm	2.9	17.7	3.6	1.4	4.92	12.6
Prof/Tech	0.8	1.6	0.7	0.8	2.29	2.00
Clerical	2.5	4.4	2.6	2.1	1.69	2.10
Blue Collar	**93.8**	**76.2**	**92.9**	**95.7**	**0.82**	**0.79**
Trans/Com	4.2	5.1	4.5	3.7	1.13	1.38
Transform	40.4	17.9	35.7	48.4	0.50	0.37
Unskilled	49.2	53.2	52.7	43.6	1.01	1.22
1-4 Years						
Man/Adm	6.8	18.0	8.0	2.8	2.25	6.43
Prof/Tech	2.8	2.7	2.9	2.4	0.93	1.13
Clerical	6.9	7.2	7.4	5.6	0.97	1.29
Blue Collar	**83.6**	**72.1**	**81.8**	**89.2**	**0.88**	**0.81**
Trans/Com	11.9	10.6	12.2	11.1	0.87	0.95
Transform	44.2	18.1	40.9	54.8	0.44	0.33
Unskilled	27.5	43.4	28.7	23.3	1.51	1.86
5-8 Years						
Man/Adm	10.9	15.3	12.6	4.6	1.21	3.33
Prof/Tech	6.3	7.1	6.7	4.6	1.06	1.54
Clerical	22.8	17.3	23.7	20.1	0.73	0.86
Blue Collar	**50.0**	**60.3**	**57.0**	**70.7**	**1.06**	**0.85**
Trans/Com	8.6	7.1	8.8	8.2	0.81	0.87
Transform	37.7	23.6	34.7	50.1	0.68	0.47
Unskilled	13.7	29.6	13.5	12.4	2.19	2.39
9-11 Years						
Man/Adm	19.7	20.4	21.0	8.3	0.97	2.46
Prof/Tech	17.3	20.1	17.2	16.5	1.17	1.22
Clerical	35.1	23.4	35.6	35.8	0.66	0.65
Blue Collar	**28.0**	**36.2**	**26.2**	**39.4**	**1.38**	**0.92**
Trans/Com	2.7	2.4	2.6	3.6	0.92	0.67
Transform	16.2	13.1	15.1	27.2	0.87	0.48
Unskilled	9.1	20.7	8.5	8.6	2.44	2.41
12+ Years						
Man/Adm	29.6	25.5	30.4	19.1	0.84	1.34
Prof/Tech	48.2	51.9	40.0	47.2	1.30	1.10
Clerical	15.8	13.2	15.6	24.3	0.85	0.54
Blue Collar	**6.3**	**9.4**	**5.9**	**9.5**	**1.59**	**0.99**
Trans/Com	0.3	0.3	0.3	0.1	1.00	3.00
Transform	2.7	3.2	2.5	5.7	1.28	0.56
Unskilled	3.3	5.9	3.1	3.7	1.90	1.59

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Census.

Occupational Profile of Women Ages 18-65

Compared to men, far fewer women have occupations listed in the 1980 Census. Of the total of 211,744 women in the sample, only 74,053, or about 35%, participate in the formal labor force. Of these 74,053 cases, 73,871, or 99.7%, are classified by color, 73,906, or 99.8% are identified by income and 73,724, or 99.6% are identified by educational level. These slight differences in the total number of cases are the result of varying number of unidentified cases with a certain variable. Thus, in the following, the total number of cases differ slightly, depending on what classification scheme is used.

Table 6.13 describes the occupational distribution of women in the sample data as a whole and also by color group. Note the striking differences between men's and women's occupational distribution: 1) the percentage of blue collar workers is much lower for women than for men (56.6% for women and 67.3% for men); 2) there are proportionally more women than men who have occupations in the categories of professional/technical and clerical (14.6% and 24.6% for women, as opposed to 8.8% and 13.3% for men); 3) occupations in the category of transportation/communications are almost non-existent for women (only 0.2%); 4) the percentage of transformative occupations is much lower for women than for men (17.5% for women and 35.7% for men); 5) there are proportionally more women than men who have unskilled/personal service occupations (38.9% for women and 23.3% for men). The same differences remain between men and women of the same color groups as well (see Table 6.1 and 5.13).

When women of the three color groups are compared, Asians do much better than do whites, who in turn do much better than do Afro-Brazilians. In other words, Asians lead whites and whites lead Afro-Brazilians in the

percentage of white collar occupations. Predictably, the opposite pattern holds for the three groups, as far as the distribution of blue collar occupations is concerned, i.e., Afro-Brazilians lead whites, who in turn lead Asians in the percentage of blue collar occupations. The ratios between the percentage of each occupational category for Asians and that for whites and Afro-Brazilians are listed in the last two columns of Table 6.13. The gaps among the three group in the percentage of blue collar occupations are significant; 34.1% for Asians, 49.2% for whites and 80.1% for Afro-Brazilians.

Table 6.13
Occupational Distribution of Women Ages 18-65 by Color Group, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	Asian %	White %	Afro-B* %	Ratio A/W**	Ratio A/AB**
Management/ Administrative	4.2	8.4	5.0	1.4	1.68	6.00
Professional/ Technical	14.6	20.1	17.6	5.5	1.14	3.65
Clerical	24.6	37.5	28.2	13.0	1.33	2.88
Blue Collar	**56.6**	**34.1**	**49.2**	**80.1**	**0.69**	**0.43**
Transportation/ Communication	0.2	0.1	0.2	0.2	0.50	0.50
Transformative	17.5	11.4	16.8	19.9	0.68	0.57
Unskilled/ Personal Service	38.9	22.6	32.2	60.0	0.70	0.38
%	100.0	100.0	100.0	100.0		
N of Cases	73,871	1,749	53,720	18,402		

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/whites; A/AB = Asians/Afro-Brazilians.

Residential differences in the occupational distribution of women are shown in Table 6.14. The data show that compared to rural women, urban women are over represented in every major occupational category but the last one, unskilled/personal service, where the percentage of rural women more than doubles that of their urban counterparts. As a result, 87.7% of rural women have blue collar occupations, as opposed to 54.9% of urban women. Meanwhile, the huge ratios between the percentage of urban vs. rural women in all three white collar occupational categories tell us that residence plays an important role in the occupational distribution of women in Brazil.

Table 6.14
Occupational Distribution of Women Ages 18-65 by Residence, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	Urban %	Rural %	U/R Ratio*
Management/ Administrative	4.2	4.4	1.1	4.00
Professional/ Technical	14.6	15.2	4.4	3.45
Clerical	24.6	25.6	6.9	3.71
Blue Collar	**56.6**	**54.9**	**87.7**	**0.63**
Transportation/ Communication	0.2	0.2	0.1	2.00
Transformative	17.5	17.7	12.5	1.42
Unskilled/ Personal Service	38.9	36.9	75.1	0.49
%	100.0	100.0	100.0	
N of Cases	74,053	70,155	3,898	

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*U/R Ratio = Urban/Rural Ratio

Compared to men's data, the gap between urban and rural residents narrows in some categories and widens in some others. For example, in the categories of professional/technical and clerical occupations, the ratios between urban and rural residents in women's data (3.45 and 3.71) are much smaller than those in men's data (9.0 and 6.43). On the other hand, the ratio between the percentage of women with managerial/administrative occupations in urban areas and those in rural areas is as big as 4.0, while the corresponding figure for men is only 1.59, indicating that there are proportionally more men than women with managerial/administrative occupations in rural areas.

In categories of the blue collar occupations, the gaps between urban and rural residents in transformative and unskilled/personal service occupations are smaller for women (1.42 and 0.49) than they are for men (2.74 and 0.23), although the percentages of women in these two categories in rural areas (12.5% and 75.1%) are about the same as those of their men counterparts (14.1% and 71.1%). This is due to the fact that the percentage of men with transformative occupations in urban areas (38.7%) is substantially higher than that of their women counterparts (23.4%) and the percentage of women in the category of unskilled/personal service occupations in urban areas (36.9%) is substantially higher than that of their men counterparts (16.7%).

Unlike with men's data, there are considerable differences in the percentage of blue collar occupations for women of the three age groups; 50.1% for the age group of 18-25 years old, 55.9% for the age group of 26-39 years old and 68.6% for the age group of 40-65 years old. In other words, the percentage of blue collar occupations increases from younger to old age groups. However, the increase in the proportion of blue collar occupations for the two older age groups is caused mainly by the dramatic decrease in the

percentage of clerical occupations. The percentage of clerical occupations drops from 39.2% for the first age group to 19.2% for the second age group, and then again declines to 9.2% for the third age group. As a result, the percentage of unskilled/personal service occupations increases sharply from younger to older age groups ; 29.4%, 39.0% and 54.7% for the first, second and third age groups, respectively.

Table 6.15
Occupational Distribution of Women Ages 18-65 by Age Group, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	18-25 %	26-39 %	40-65 %
Management/ Administrative	4.2	2.0	5.0	6.5
Professional/ Technical	14.6	8.7	19.9	15.7
Clerical	24.6	39.2	19.2	9.2
Blue Collar	**56.6**	**50.1**	**55.9**	**68.6**
Transportation/ Communication	0.2	0.1	0.3	0.2
Transformative	17.5	20.6	16.6	13.7
Unskilled/ Personal Service	38.9	29.4	39.0	54.7
%	100.0	100.0	100.0	100.0
N of Cases	74,053	28,513	28,546	16,994

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

As I mentioned above, although the number of women who have occupations listed in the census is only about 35% of the total women in the sample, the proportions of them with professional/technical and clerical occupations are much greater than the corresponding proportions for their

men counterparts in every age group. The percentage of women who have professional/technical occupations for the three age groups are 8.7%, 19.9% and 15.7% respectively, as opposed to 6.4%,10.9% and 8.4% for their men counterparts. Similarly, 39.2%, 19.2% and 9.2% of women in the three age groups have clerical occupations, compared to 22.1%, 11.1% and 7.9% of men.

In a word, the data show that compared to men, women are more likely to have clerical occupations, especially at ages 18-25, and more likely to have professional/technical occupations, especially at ages 26-39, if they happen to have white collar occupations. On the other hand, men are more likely than women to have managerial/administrative occupations at all age groups (see Table 6.4). As far as the blue collar occupations are concerned, men are more concentrated in transportation/communications and transformative occupations, while women are more concentrated in unskilled/personal service occupations (see Table 6.15).

As expected, the data on women show that income is, in general, positively correlated with the proportion of white collar occupations and negatively correlated with the proportion of blue collar occupations. The basic patterns of the distribution of each major occupational category for women are very similar to those for men. For example, the correlation between income and the proportion of the first two categories of white collar occupations is positive and linear, meaning that the proportions of these occupations increase from lower to higher income levels, as shown in Table 6.16. Similarly, the highest percentage of clerical occupations is found among women with an average income of up to three minimum wages, just as the case with their men counterparts. And the proportion of blue collar occupations declines sharply from lower to higher income levels for both men and women.

Table 6.16
Occupational Distribution of Women Ages 18-65 by Income Level, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	1MW* %	2MW %	3MW %	3+MW %
Management/ Administrative	4.2	0.5	1.3	3.9	13.1
Professional/ Technical	14.6	2.7	6.6	17.4	38.9
Clerical	24.6	8.7	23.4	40.9	33.5
Blue Collar	**56.6**	**88.0**	**68.9**	**37.8**	**14.4**
Transportation/ Communication	0.2	0.0	0.3	0.3	0.1
Transformative	17.5	12.5	28.0	18.7	4.7
Unskilled/ Personal Service	38.9	75.5	40.5	18.8	9.6
%	100.0	100.0	100.0	100.0	100.0
N of Cases	73,906	18,265	27,879	10,815	16,947

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*MW = Minimum Wage

However, there are some differences between men and women too. For instance, the percentage of professional/technical occupations for women increases sharply to 17.4% at the third income level, and the percentage of clerical occupations for women increases dramatically to 23.4% at the second income level. In comparison, the percentage of professional/technical for men at the same income level is only 3.9%, and the percentage of clerical occupations for men at the same income level is only 12.3%. In fact, the percentages of these two categories for men at the highest income level are still lower than those of women at lower income levels. Furthermore, the rate of decline for the percentage of blue collar occupations is much faster for

women than it is for men; a decline of 73.6 percentage point from 88% at the income level of one minimum wage to 14.4% at the income level of above three minimum wages for women, compared to a decline of 40.4 percentage points from 90.3% at the income level of one minimum wage to 49.9% at the income level of above three minimum wages for men. In a way, this suggests some kind of discrimination against women as far as income is concerned because higher percentages of white collar occupations for women have not translated into higher average income for them.

The occupational distribution for women varies a great deal by educational level, especially at the higher levels, as shown in Table 6.17. While 97.7% of women with no schooling at all and 85.3% of women with 1-4 years of schooling have blue collar occupations, only 50.2% of women with 5-8 years of schooling and 10.6% of women with 9-11 years of schooling do so. As for women with more than 12 years of schooling, less than 2% of them have blue collar occupations. This clearly indicates that education is one of the most important factors determining whether Brazilian women have white or blue collar occupations.

If we look at the occupational distributions across educational levels, we find that different occupations are more prevalent at different educational levels. For women with no schooling, the overwhelming majority of them (86.3%) have unskilled/personal service occupations. For women with 1-4 years of schooling, unskilled/personal service occupations are still the primary ones, but a considerable number of them (27.1%) are engaged in transformative occupations. There are some fundamental changes at the level of 5-8 years of schooling: clerical occupations becomes the primary occupations, with 36.9%, and almost equal number of women have occupations in the categories of transformative (24.4%) and

unskilled/personal service (25.6%). The percentage of clerical occupations continues to grow to as much as 60% for women with 9-11 years of schooling, and professional/technical occupations have become the second biggest occupations, with 22.5% of women having them. At the highest level of 12 or more years of schooling, nearly 60% of women have professional/technical occupations, and over one third of them are still engaged in clerical occupations.

To sum up, unskilled/personal service occupations are the primary occupations for women with less than five years of schooling, clerical occupations are the primary ones for women with 5-11 years of schooling, and professional/technical occupations are the primary occupations for women with 12 or more years of schooling.

Table 6.17
Occupational Distribution of Women Ages 18-65
by Education, Metropolitan São Paulo, Brazil (1980)

Occupation	Sample %	0 %	1-4 %	5-8 %	9-11 %	12+ (years) %
Management/ Administrative	4.2	0.5	2.5	4.7	6.9	8.3
Professional/ Technical	14.6	0.7	3.8	8.3	22.5	58.9
Clerical	24.6	1.1	8.5	36.9	60.0	30.8
Blue Collar	**56.6**	**97.7**	**85.3**	**50.2**	**10.6**	**1.9**
Transportation/ Communications	0.2	0.1	0.3	0.2	0.1	0.0
Transformative	17.5	11.3	27.1	24.4	4.5	0.6
Unskilled/ Personal Service	38.9	86.3	57.9	25.6	6.0	1.3
%	100.0	100.0	100.0	100.0	100.0	100.0
N of Cases	73,724	8,319	29,762	13,493	12,655	9,496

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Compared to the occupational profile of men with the same education, women with less than five years of schooling lead their men counterparts in the percentage of blue collar occupations and women with more than five years of schooling lead men in the percentage of white collar occupations. It is particularly interesting to see that of people with more than four years of schooling, there are proportionally more men than women who have managerial/administrative occupations, and there are proportionally more women than men who have either professional/technical and clerical occupations (see Table 6.6 and 5.17).

I have described above the differences in occupational distribution of women ages 18-65 by color, residence, age group, income level and educational level separately so far. In the following, I will examine whether color differences in occupational distribution remain when the other variables are controlled separately. In other words, I want to find out how much of the color differences, if any, result from the differences in factors other than race, such as place of residence, age, income and educational level.

When the three color groups are compared in terms of occupational distribution controlling for residence, i.e., in urban and rural areas separately, there are some minor changes in most of the occupational categories in urban areas, and there are significant changes in most of the categories in rural areas. For example, the ratios between the percentage of blue collar occupations for Asians vs. whites and that for Asians vs. Afro-Brazilians in urban areas are 0.68 and 0.40, compared to 0.69 and 0.43 before controlling for residence. And the ratios between Asians and whites in most occupational categories drop slightly while the ratios between Asians and Afro-Brazilians increase slightly (see Table 6.13 and 6.18).

Table 6.18
Occupational Distribution of Women of Ages 18-65
by Residence and Color, Metropolitan São Paulo, Brazil, 1980

Residence	Sample %	Asian %	White %	Afro-B* %	Ratio A/W**	Ratio A/AB**
Urban						
Management/ Administrative	4.4	8.7	5.2	1.4	1.67	6.21
Professional/ Technical	15.2	20.9	18.2	5.7	1.15	3.67
Clerical	25.6	38.2	29.3	13.6	1.30	2.81
Blue Collar	**54.9**	**32.2**	**47.3**	**79.8**	**0.68**	**0.40**
Transportation/ Communication	0.2	0.1	0.2	0.2	0.50	0.50
Transformative	17.7	11.5	17.1	20.4	0.67	0.56
Unskilled/ Personal Service	36.9	20.6	30.0	58.6	0.69	0.35
Rural						
Management/ Administrative	1.1	3.9	1.3	0.2	3.00	19.5
Professional/ Technical	4.4	8.7	5.3	1.6	1.64	5.44
Clerical	6.9	27.7	7.3	3.7	3.79	7.49
Blue Collar	**87.7**	**59.7**	**86.1**	**94.6**	**0.69**	**0.63**
Transportation/ Communication	0.1	0.0	0.1	0.0	0.00	0.00
Transformative	12.5	10.6	12.7	12.3	0.83	0.86
Unskilled/ Personal Service	75.1	49.1	73.3	82.3	0.67	0.60

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/Whites, A/AB = Asians/Afro-Brazilians

On the other hand, the differences among the three color groups, especially those between Asians and Afro-Brazilians, increase dramatically in rural areas after controlling for residence. For instance, while the ratio between the percentages of blue collar occupations for Asians and whites remains the same in rural areas as it is in urban areas, Asians with managerial/administrative occupations are three times as many as whites and Asians with clerical occupations are 3.79 times as many as whites. The ratio between Asians and Afro-Brazilians in the percentage of blue collar occupations increased from 0.43 before the control of residence to 0.63 in rural areas after controlling for residence. The biggest differences between Asians and Afro-Brazilians are found in the distribution of white collar occupations: The percentage of Asians with managerial/administrative occupations are 19.5 times that of Afro-Brazilians, the percentage of Asians with professional/technical occupations are 5.44 times that of Afro-Brazilians, and the percentage of Asians with clerical occupations are 7.49 times that of Afro-Brazilians, as opposed to 6.00, 3.65 and 2.88, the corresponding ratios between them before controlling for residence. In short, the data suggest that controlling for residence does not reduce the color differences in the occupational distribution for Brazilian women. Therefore, it is safe to conclude that the existing differences among the three color groups are not due to the residential variations among these groups.

Table 6.19 describes the occupational distribution of Asian, white and Afro-Brazilian women controlling for age. First of all, let's look at some of the major characteristics of each color group in the same age group. In the age group of 18-25, Asians and whites are highly concentrated in clerical occupations (63% and 45.1%, respectively), whereas Afro-Brazilians are heavily concentrated in unskilled/personal service occupations (48%). In the

age group of 26-39, although clerical occupations are still the primary occupations for Asians (32.8%), they are not as dominant as they are in the first age group, and the percentage of professional/technical occupations increases to 27%. For whites and Afro-Brazilians, unskilled/personal service occupations have become the primary occupations (32.2% for whites and 61.2% for Afro-Brazilians). However, the main difference between whites and Afro-Brazilians is that more than 50% of white women have white collar occupations, while less than 20% of Afro-Brazilian women have white collar occupations. In the age group of 40-65, unskilled/personal service occupations are the primary occupations for all three groups, but their actual percentages vary as much as 40% and consequently their percentages for white collar occupations vary accordingly. Asians and whites in this age group have similar occupational distribution, especially with respect to white collar ones (see Table 6.19).

As far as the changes in the degree of color variations in each age group are concerned, we can compare the ratios in the last two columns of Table 6.19, where age is controlled, with the last two columns of Table 6.13, where age is not controlled. We find that in the two younger age groups, 18-25 and 26-39, the color differences have narrowed to some degree in most of the occupational categories, and in the age group of 40-65, the color differences have widened, except for the differences between Asians and whites in the white collar occupations, which have narrowed considerably. This indicates that in spite of considerable differences in occupational distribution existing among the three color groups , there is more equality for women under the age of forty than those over forty. In other words, it suggests that in the aggregate, some progress had been made with regard to racial equality in the few decades preceding 1980, even though it is far from adequate.

Table 6.19
Occupational Distribution of Women Ages 18-65
by Age and Color, Metropolitan São Paulo, Brazil (1980)

Age Group	Sample %	Asian %	White %	Afro-B* %	Ratio A/W**	Ratio A/AB**
Ages 18-25						
Man/Adm	2.0	3.5	2.4	0.8	1.46	4.38
Prof/Tech	8.7	11.3	10.4	3.8	1.09	2.97
Clerical	39.2	63.0	45.1	21.3	1.40	2.96
Blue Collar	**50.1**	**22.3**	**42.1**	**74.2**	**0.53**	**0.30**
Transp/Comm	0.1	0.0	0.1	0.2	0.00	0.00
Transformative	20.6	7.4	19.0	26.0	0.38	0.28
Unskld/Personal	29.4	14.9	23.0	48.0	0.65	0.31
Ages 26-39						
Man/Adm	5.0	10.0	5.8	1.9	1.72	5.26
Prof/Tech	19.9	27.0	23.7	8.0	1.14	3.38
Clerical	19.2	32.8	22.0	9.8	1.49	3.35
Blue Collar	**55.9**	**30.2**	**48.4**	**80.3**	**0.62**	**0.38**
Transp/Comm	0.3	0.0	0.2	0.3	0.00	0.00
Transformative	16.6	10.7	16.0	18.8	0.67	0.57
Unskld/Personal	39.0	19.5	32.2	61.2	0.61	0.32
Ages 40-65						
Man/Adm	6.5	11.7	8.0	1.4	1.46	8.36
Prof/Tech	15.7	18.4	19.3	4.3	0.95	4.28
Clerical	9.2	11.7	10.9	3.4	1.07	3.44
Blue Collar	**68.6**	**58.2**	**61.8**	**90.9**	**0.94**	**0.64**
Transp/Comm	0.2	0.3	0.2	0.1	1.50	3.00
Transformative	13.7	18.4	14.5	10.4	1.29	1.77
Unskld/Personal	54.7	39.6	47.0	80.4	0.84	0.49

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/Whites, A/AB = Asians/Afro-Brazilians

When income is controlled, the color differences in occupational distribution generally become smaller, except in a few categories and/or at some income levels. For example, at the income level of up to one minimum wage, the gaps between Asians and whites and between Asians and Afro-Brazilians become wider in most occupational categories. The most striking differences between Asians on the one hand, and whites and Afro-Brazilians on the other are in the distributions of white collar occupations, as shown in the first three rows of the last two columns of Table 6.20. Although only 3% of Asians have managerial/administrative occupations, it is 4.28 times that of whites and 30 times that of Afro-Brazilians, as opposed to the ratio of 1.68 between Asians and whites and the ratio of 6.00 between Asians and Afro-Brazilians before controlling for income. The gap between Asians and whites in professional/technical and clerical occupations widens a little bit, while the gap between Asians and Afro-Brazilians in these two categories has widened considerably. For instance, the ratios between Asians and Afro-Brazilians in these two categories have increased from 3.65 and 2.88 to 5.75 and 5.51, respectively. On the other hand, the gap between the three groups in the percentage of blue collar occupations has narrowed considerably; the ratio between Asians and whites is now 0.84, compared to 0.69 without controlling for income, and the ratio between Asians and Afro-Brazilians is now 0.74, as opposed to 0.43 before.

At the income level of up to two minimum wages, the color differences have narrowed further in varying degrees in almost all occupational categories (see Table 6.20). Furthermore, whites have surpassed Asians in the percentage of professional/technical occupations (7.9% for whites vs. 5.5% for Asians). As the proportion of Asians with clerical occupations jumps to 44.8%, the gap between Asians and the other two

groups in this category has widened somewhat. Consequently, the gaps in the percentage of blue collar occupations among the three groups have widened a little bit from what they are at the previous income level. Nevertheless, the proportions of whites and Afro-Brazilians with transformative occupations have become almost identical (27.9% for whites and 28.4% for Afro-Brazilians), which is also close to the percentage of Asians, 22.4%.

At the income level of up to three minimum wages, the color differences, especially the gap between Asians and whites, continue to narrow in most occupational categories. Whites and Asians have become more similar in the distribution of professional/technical and clerical occupations. For example, 16.5% of Asians, as opposed to 18.7% of whites, are classified in professional/technical occupations and 50.6% of Asians, as opposed to 43.4% of whites, are classified in clerical occupations. Meanwhile, there are significant increases in the percentage of Afro-Brazilians with the above occupations so that the gap between them and the other two groups reduces greatly. Specifically, for Afro-Brazilians, the percentage of professional/technical occupations increases to 12.6%, which is more than 4 times of the percentage (3.8%) at the previous income level, and the percentage of clerical occupations increases to 29.6%, which is more two times of the percentage (12.7%) at the previous income level. In blue collar occupations, Asians and whites become more similar, and the gap between Afro-Brazilians the other two widens, in spite of the sharp decrease of more than 20% in the proportions of unskilled/personal service occupations.

At the income level of above three minimum wages, whites finally surpass Asians in the percentage of white collar occupations. It turns out that both Asians and whites have the same proportion of their members in managerial/administrative occupations, 13.4%, and almost the same

proportion of their members in clerical occupations, 34.9% for Asians and 33.6% for whites. However, there are proportionally more whites than Asians with professional/technical occupations; 40.3% of whites vs. 32.4% of Asians. At the same time, Afro-Brazilians have made tremendous progress in white collar occupations as well, as shown in Table 6.20. The ratios between Asians and Afro-Brazilians in all three categories of white collar occupations are now between 1.10 and 1.35. In addition, the gap between Asians and Afro-Brazilians in the proportion of blue collar occupations has also narrowed from the previous income levels so that Asians are now ranked second after Afro-Brazilians (30.9% for Afro-Brazilians, 19.3% for Asians and 12.6% for whites).

In sum, when educational level is controlled, the color differences in most occupational categories tend to become smaller with the increase of education, although they are surprisingly big at the lower educational levels. Meanwhile, some occupations, such as professional/technical and clerical, are found to be more closely associated with educational level than others, and therefore, are more sensitive to the change of educational level. Of all the independent variables examined here, education is the most important factor in determining the occupational distribution of men and women in Metropolitan São Paulo, Brazil. In the following, I will describe the findings in Table 6.20 one educational level at a time to see how education affects the occupational distribution of the three color groups.

Table 6.20
Occupational Distribution of Women Ages 18-65
by Income and Color, Metropolitan São Paulo, Brazil (1980)

Income Level	Sample	Asian	White	AB*	Ratio	
	%	%	%	%	A/W**	A/AB**
One MW						
Man/Adm	0.5	3.0	0.7	0.1	4.28	30.0
Prof/Tech	2.7	4.6	3.7	0.8	1.24	5.75
Clerical	8.7	21.5	11.0	3.9	1.95	5.51
Blue Collar	**88.0**	**70.8**	**84.6**	**95.1**	**0.84**	**0.74**
Transp/Com	0.0	0.0	0.0	0.0	0.00	0.00
Transform	12.5	18.5	14.5	8.7	1.28	2.13
Unskilled	75.5	52.3	70.1	86.4	0.75	0.61
Two MW						
Man/Adm	1.3	2.0	1.5	0.7	1.33	2.86
Prof/Tech	6.6	5.5	7.9	3.8	0.70	1.45
Clerical	23.4	44.8	27.9	12.7	1.61	3.53
Blue Collar	**68.9**	**47.6**	**62.8**	**82.8**	**0.76**	**0.57**
Transp/Com	0.3	0.0	0.3	0.3	0.00	0.00
Transform	28.0	22.4	27.9	28.4	0.80	0.79
Unskilled	40.5	25.2	34.6	54.1	0.73	0.47
Three MW						
Man/Adm	3.9	6.5	4.1	2.5	1.59	2.60
Prof/Tech	17.4	16.5	18.7	12.6	0.88	1.31
Clerical	40.9	50.6	43.4	29.6	1.17	1.71
Blue Collar	**37.8**	**26.4**	**33.7**	**62.1**	**0.78**	**0.43**
Transp/Com	0.3	0.4	0.3	0.3	1.33	1.33
Transform	18.7	11.1	17.6	30.9	0.63	0.36
Unskilled	18.8	14.9	15.8	30.9	0.94	0.48
Above Three MW						
Man/Adm	13.1	13.4	13.4	9.9	1.00	1.35
Prof/Tech	38.9	32.4	40.3	27.4	0.80	1.18
Clerical	33.5	34.9	33.6	31.8	1.04	1.10
Blue Collar	**14.4**	**19.3**	**12.6**	**30.9**	**1.53**	**0.62**
Transp/Com	0.1	0.0	0.1	0.2	0.00	0.00
Transform	4.7	4.7	4.2	10.4	1.12	0.45
Unskilled	9.6	14.6	8.3	20.3	1.76	0.72

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/Whites, A/AB = Asians/Afro-Brazilians

For people with no schooling at all, Asians differ significantly from the other two groups, who are very similar, in most of the occupational categories. For example, as many as 12.1% and 8.6% of Asians have managerial/administrative and professional/technical occupations, while less than 1% of both whites and Afro-Brazilians have these occupations. Consequently, about 98% of whites and Afro-Brazilians have blue collar occupations, compared to only 76.7% of Asians who do so. Why such high percentage of Asians with no schooling have these white collar occupations remains to be explored. For one thing, the fact that very few Asians have no schooling at all, relative to large numbers of whites and Afro-Brazilians with no schooling, may have contributed to this extremely skewed picture.

At the level of 1-4 years of schooling, the color differences reduce considerably in most occupational categories, except in managerial/administrative occupations, where Asians are still highly concentrated, relative to the other two groups. This again may be due to the fact that most Asians have more than four years of schooling and when a small number of them with 1-4 years of schooling have managerial/administrative occupations, they result in a relatively big proportion. The impact of education is reflected in the distribution of both white and blue collar occupations for all three groups. For instance, both whites and Afro-Brazilians have surpassed Asians in the percentage of professional/technical occupations, and the proportions of clerical, transformative and unskilled/personal service occupations for Asians and whites have become very similar; 12.7% vs. 10.2%, 26.3% vs. 29.0% and 50.7% vs. 53.1% for Asians and whites, respectively. Furthermore, all three groups have exactly the same proportion (0.3%) of their workforce in transportation/communications occupations. Although Afro-Brazilians

continue to fall behind Asians in two of the white collar occupations, the gap between them has reduced.

For people with 5-8 years of schooling, whites rank first, followed by Asians and Afro-Brazilians, in the percentage of white collar occupations, although Asians still have the lead in the percentage of managerial/administrative occupations. The proportion of Afro-Brazilians with professional/technical occupations (7.4%) continue to be slightly higher than that of Asians (6.9%), while their proportion in managerial/administrative occupation (1.9%) is still far below that of Asians (9.7%). Meanwhile, there is a rapid increase in the proportion of clerical occupations for Afro-Brazilians (from 4.5% to 24.2%), which is mainly the result of increased education. However, Afro-Brazilians are still overrepresentated in the blue collar occupations since the majority of them have not received more than five years of schooling.

At the level of 9-11 years of schooling, the proportions of white collar occupations for both whites and Afro-Brazilians exceed that of Asians, although Asians still have the lead in managerial/administrative and clerical occupations over the other two. It is particularly important to note that there are substantial increases in the proportions of professional/technical occupations on the part of whites and Afro-Brazilians. This again is an indication that these occupations are more closely associated with education than with color. Conversely, there are substantial decreases in the percentage of blue collar occupations for all three groups, suggesting the strong negative association between education and blue collar occupations. In fact, only less than 10% of whites, and less than 20% of Asians and Afro-Brazilians are now engaged in blue collar occupations at this educational level.

Table 6.21
Occupational Distribution of Women Ages 18-65
by Education and Color, Metropolitan São Paulo, Brazil (1980)

Years of Schooling	Sample	Asian	White	Afro-B	A/W	A/AB
Zero Years	%	%	%	%		
Man/Adm	0.5	12.1	0.6	0.3	20.2	40.3
Prof/Tech	0.7	8.6	0.9	0.4	9.56	21.5
Clerical	1.1	2.7	1.2	1.0	2.25	2.70
Blue Collar	**97.7**	**76.7**	**97.2**	**98.4**	**0.79**	**0.78**
Transp/Com	0.1	0.0	0.1	0.1	0.00	0.00
Transform	11.3	19.9	13.4	8.5	1.48	2.34
Unskilled	86.3	56.8	83.7	89.8	0.68	0.63
1-4 Years						
Man/Adm	2.5	8.0	3.1	1.0	2.58	8.00
Prof/Tech	3.8	1.9	4.4	2.6	0.43	0.73
Clerical	8.5	12.7	10.2	4.5	1.25	2.82
Blue Collar	**85.3**	**77.3**	**82.4**	**91.8**	**0.94**	**0.84**
Transp/Com	0.3	0.3	0.3	0.3	1.00	1.00
Transform	27.1	26.3	29.0	23.0	0.91	1.14
Unskilled	57.9	50.7	53.1	68.5	0.95	0.74
5-8 Years						
Man/Adm	4.7	9.7	5.6	1.9	1.73	5.11
Prof/Tech	8.3	6.9	8.7	7.4	0.79	0.93
Clerical	36.9	32.4	41.5	24.2	0.78	1.34
Blue Collar	**50.2**	**51.0**	**44.2**	**66.5**	**1.15**	**0.77**
Transp/Com	0.2	0.0	0.2	0.1	0.00	0.00
Transform	24.4	21.4	22.0	31.2	0.97	0.69
Unskilled	25.6	29.6	22.0	35.2	1.35	0.84
9-11 Years						
Man/Adm	6.9	8.6	7.4	3.0	1.16	2.87
Prof/Tech	22.5	12.9	23.7	17.8	0.54	0.72
Clerical	60.0	62.1	60.0	59.3	1.03	1.05
Blue Collar	**10.6**	**16.4**	**8.9**	**19.8**	**1.84**	**0.83**
Transp/Com	0.1	0.0	0.0	0.1	0.00	0.00
Transform	4.5	3.7	3.9	8.8	0.95	0.42
Unskilled	6.0	12.7	5.0	10.9	2.54	1.17
12+ Years						
Man/Adm	8.3	7.3	8.4	7.3	0.87	1.00
Prof/Tech	58.9	49.3	60.1	47.2	0.82	1.04
Clerical	30.8	39.8	29.7	42.7	1.34	0.93
Blue Collar	**1.9**	**3.6**	**1.8**	**2.8**	**2.00**	**1.29**
Transp/Com	0.0	0.0	0.0	0.0	0.00	0.00
Transform	0.6	0.6	0.6	1.5	1.00	0.40
Unskilled	1.3	3.0	1.2	1.3	2.50	2.30

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Census.

Finally, for those with 12 or more years of schooling, most of the color differences have disappeared, i.e., the occupational profiles of the three groups are very similar: Blue collar occupations account for less than 4% for all three groups, and Asians and Afro-Brazilians have similar proportions of white collar occupations as well; 7.3% of for both Asians and Afro-Brazilians have managerial and administrative occupations; 49.3% of Asians and 47.2% of Afro-Brazilians have professional/technical occupations; 39.8% of Asians and 42.7% of Afro-Brazilians have clerical occupations. In comparison, whites lead the other two groups in managerial/administrative and professional/technical occupations, with 8.4% and 60.1%, respectively. This suggests that beyond 12 years of schooling, whites have advantages over both Asians and Afro-Brazilians in terms of access to more privileged white collar occupations, even if they have the same amount of education. To put it differently, although there is an increasing degree of parity among color groups at higher educational levels, Asians and Afro-Brazilians are still disadvantaged, relative to whites, in terms of access to better occupations beyond twelve years of schooling.

Summary

The occupational distribution of men ages 18-65 varies a great deal by color. The percentage of Asians with white collar occupations (52.8%) is substantially higher than that of whites (36.9%), let alone that of Afro-Brazilians (16.3%). More importantly, nearly 39% of Asians have occupations in either managerial/administrative or professional/technical categories, compared to about 22% for whites and about 7% for Afro-Brazilians.

Accordingly, Afro-Brazilians have the highest percentage of blue collar occupations (83.7%), with the majority of them in transformative occupations (50.6%). The percentage of blue collar occupations for whites (63.1%) is substantially lower than that of Afro-Brazilians (83.7%), but substantially higher than that of Asians (47.2%).

Urban residents have a much higher percentage of white collar occupations (35.8%) than do rural residents (10.3%). The difference between them is particularly big in the categories of professional/technical and clerical occupations; the percentages of these two occupations for urban residents are 9.00 and 6.43 times those of rural residents. They also have very different distributions of blue collar occupations; most of urban blue collar workers have transformative occupations, while the overwhelming majority of rural blue collar workers have unskilled/personal service occupations.

The three age groups are very similar in the distribution of white vs. blue collar occupations, but they differ in the concentration of specific occupations, especially within white collar occupations. For instance, younger age groups have a higher percentage of clerical occupations, and older age groups have a higher percentage of managerial/administrative occupations. The middle age group is almost evenly divided among the three white collar occupations.

The average income of men is highly correlated with their occupational distribution. Therefore, the prestigious occupations of managerial/administrative and professional/technical categories are highly concentrated at the income level of above three minimum wages (20% and 16%, respectively), and the low status occupations of unskilled/personal service and transformative categories are heavily concentrated at the lower income levels.

The occupational distribution of men varies the most by educational level. The percentage of blue collar occupations decreases dramatically from lower to higher levels of education, and the percentages of managerial/administrative and professional/technical occupations increase substantially from lower to higher level of education. For example, the percentage of blue collar occupations decreases from 93.8% at the level of no schooling to 83.6% at the level of 1-4 years of schooling, to 60% at the level of 5-8 years of schooling, to 28% at the level of 9-11 years of schooling, and finally to 6.3% at the level of 12 or more years of schooling. Meanwhile, the percentages of managerial/administrative and professional/technical occupations increase by more than 50% at each higher level, and finally reach 29.6% and 48.2%, respectively, at the level of 12 or more years of schooling.

The occupational differences among the three color groups still remain much the same when place of residence is controlled. In both urban and rural areas, Asians do significantly better than do whites and Afro-Brazilians: In urban areas, the ratio between the percentages of blue collar occupations for Asians and whites is 0.75, and the same ratio between Asians and Afro-Brazilians is 0.54; the corresponding ratios in rural areas are 0.79 and 0.76. In a word, place of residence does not contribute much to the occupational differences among the three color groups.

Different age groups of the three color groups have slightly different occupational distributions, but the color differences remain about the same across age groups. For Asians and whites, the age group of 26-39 has the highest percentage of white collar occupations, while for Afro-Brazilians, the age group of 18-25 does so. In general, the differences among the three color groups are smaller at the age group of 40-65, and bigger at the other two age groups in most occupational categories.

As expected, the occupational difference among the three color groups reduce considerably when income is controlled. Specifically, the difference between Asians and whites is smaller at the two ends of income level but larger at the two middle income levels, while the difference between Asians and Afro-Brazilians becomes bigger when income increases. The ratios between Asians and whites at the four income levels are, respectively, 0.96, 0.81, 0.80 and 0.88, and the ratios between Asians and Afro-Brazilians are, respectively, 0.91, 0.74, 0.71 and 0.56. On the other hand, the three color groups have similar percentages of unskilled/personal service occupations at the two lowest income levels, and similar percentages of transportation/communications occupation at the third income level. This suggests that the distribution of these occupations have less to do with color.

When educational level is controlled, the occupational differences among the three color groups reduce considerably, especially at higher levels of education. This is particularly obvious in the distribution of white collar occupations for Asians and whites. At the levels of 5-8 and 9-11 years of schooling, Asians and whites have similar distributions of managerial/administrative and professional/technical occupations. Meanwhile, the gap between Asians and Afro-Brazilians in most occupational categories is smaller than it is before the control of education. However, the degree of impact of education on different color groups are not uniform, i.e., education seem to have greater positive impact on whites and Afro-Brazilians than it does on Asians.

There are some differences between the occupational distributions of men and women in metropolitan São Paulo, Brazil. First of all, only about 35% of women in the sample data have occupations listed in the census. Second, there are proportionally more women who have clerical and

professional/technical occupations than do men, and consequently fewer women have blue collar occupations. Nonetheless, the percentage of unskilled/personal service occupations for women is much higher than it is for men because transportation/communications is almost non-existent and transformative occupations are less popular among women than they are among men.

Despite the above differences, the basic patterns in the occupational distribution of men are also present in that of women. In other words, there are similar occupational differences among women by color, residence, age group, income and education. For example, 65.9% of Asian women, as opposed to 50.8% of whites and 19.9 of Afro-Brazilians, have white collar occupations, and 54.9% of urban women have blue collar occupations while 87.7% of rural women do so. Unlike men's data, there are considerable differences among the three age groups of women in the percentage of blue collar occupations; 50.1% of women ages 18-25, 55.9% of women ages 26-39 and 68.6% of women ages 40-65 are blue collar workers.

There are sharp decreases in the percentage of blue collar occupations for women from lower to higher income levels; 88%, 68.9%, 37.8% and 14.4%, respectively, for the four income levels. It is particularly important to note that the percentage of professional/technical occupations for women increases to 17.4% at the third income level and again to 38.9% at the fourth income level, which are much higher than those for men at the same income level. The occupational differences of women by educational level are the greatest; nearly 98% women with no schooling, 85.3% of women with 1-4 years of schooling, and about 50% of women with 5-8 years of schooling have blue collar occupations while less than 2% of women with 12 or more years of schooling do so. Moreover, the percentage of professional/technical

occupations for women jumps to 22.5% at the level of 9-11 and 58.9% at the level of 12 or more years of schooling. Compared to men, women have a higher percentage of blue collar occupations when they have less than five years of schooling but they have a higher percentage of white collar occupations when they have more than 5 years of schooling. Most of the white collar occupations are in clerical and professional/technical categories, and the percentage of women with managerial/administrative occupations is far lower than that of men at all educational levels.

When place of residence is controlled, there are minor changes in the occupational distribution of the three color groups in urban areas, but the color differences widen in rural areas. For instance, the percentage of Asians with managerial/administrative occupations is 3 times that of whites and 19.5 times that of Afro-Brazilians, the percentage of Asians with professional/technical occupations is 1.64 times that of whites and 5.44 times that of Afro-Brazilians, and the percentage of Asians with clerical occupations is 3.79 times that of whites and 7.49 times that of Afro-Brazilians. Thus, the existing differences among the three groups are not due to the residential variations among these groups.

When age is controlled, the differences among the three groups in the percentages of white vs. blue collar occupations are smaller in older age groups. The ratio between the percentage of blue collar occupations for Asians and whites decreases sharply from 0.94 at the oldest age group to 0.53 at the youngest age group. The same ratio between Asians and Afro-Brazilians drops from 0.64 to 0.30. At the same time, the differences between Asians and whites in white collar occupations are biggest at the age group of 26-39, and the differences between Asians and Afro-Brazilians are smaller at younger age groups.

The occupational differences among the three color groups become smaller in most cases, when income is controlled. Moreover, the gaps among them narrow considerably as income increases, especially in white collar occupations. For example, at the highest income level, the percentage of managerial/administrative occupations for Asians (13.4%) is exactly the same as that of whites, compared to a ratio of 4.28 between them at the lowest income level. Similarly, the ratio between the percentages of managerial/administrative occupations for Asians and Afro-Brazilians drops from 30.0 at the lowest income level to 1.35 at the highest income level. At the income levels of more than two minimum wages, whites surpass Asians in professional/technical occupations and the gap between Asians and Afro-Brazilians in this regard narrows considerably. It turns out that the percentage of blue collar occupations for Asians (19.3%) is higher than that of whites (12.6%) at the highest income level.

When educational level is controlled, the differences among the three color groups become smaller in most cases, particularly at higher educational levels. The occupational differences between Asians and the other two groups are the biggest at the level of no schooling; more than 20% of Asians have managerial/administrative and professional occupations, compared to less than 1% of both whites and Afro-Brazilians. However, at 1-11 years of schooling, although Asians continue to lead in the percentage of managerial/administrative occupations, both whites and Afro-Brazilians exceed Asians in the percentages of professional/technical occupations. At the level of 12 or more years of schooling, whites finally surpass Asians, and Afro-Brazilians have caught up with Asians in the percentage of managerial/administrative occupations as well. In fact, at higher educational levels, Asians and Afro-Brazilians are more similar in many aspects, and at 12

or more years of schooling, the three groups have very similar occupational profiles. To conclude, education is highly correlate with occupation and explains most of the occupational differences among the three color groups. Nonetheless, Asians have a great advantage over the other two at the level of no schooling, and whites have advantages over the other two in terms of access to more privileged occupations beyond 11 years of schooling.

CHAPTER 7
MEAN INCOME OF ASIANS, WHITES AND AFRO-BRAZILIANS

In this chapter, I examine the mean income, the most important indicator of socioeconomic standing, of men and women ages 18-65 in Metropolitan São Paulo, Brazil. Since the main focus here is on the mean income of the three color groups and there are vast differences in the mean income of men and women, I discuss men and women separately. The first part of the chapter deals with men's mean income and the second part deals with women's mean income, with brief comparisons between the two when necessary. The hypothesis tested here is that the mean income of a color group is mainly a function of its educational level, occupational distribution, age structure and residential location. In other words, after controlling for these factors, color itself does not contribute much to the explanation of the income differences among the color groups.

In both sections, I first describe the mean income by color, age group, educational level, place of residence and occupation, and then examine the color differences in mean income by age group, educational level, residence and occupation separately to see how much of the differences are due to factors other than color. Finally, I use regression analyses to measure and compare the effect of each of the independent variables on mean income, while controlling for one or more variables simultaneously.

The 1980 Brazilian Census recorded monthly income of individuals from various sources, such as income from occupation, kind, retirement

(social security), rent, gift and capital, in the twelve-month period preceding the census. In this study, I calculated a new variable, "mean income," from the sum of income from all sources included in the census. Thus, "mean income" here refers to the overall monthly income of an individual. To put the mean income in perspective, we need to keep in mind that the minimum wage in 1980 in Brazil was 4,150 cruzeiros, which was the equivalent of U.S. $74.70 (Cz$5,552.8 = $100, in 1980). Furthermore, it is also helpful to use the minimum wage as a unit of mean income and think of mean income in terms of minimum wages when different groups are compared.

Mean Income of Men Ages 18-65

The sample data of men ages 18-65 show that the three color groups differ substantially in mean income, as described in Table 7.1. On average, Asians have a monthly income of Cz$35,492, whites Cz$21,111 and Afro-Brazilians Cz$10,775. In other words, the mean monthly income of Asians is more than 1.5 times that of whites, more than 3 times that of Afro-Brazilians, and the mean income of whites is more than 2 times that of Afro-Brazilians. We can also compare the average incomes of the three color groups with the average income of the sample in order to see how each group fares relative to the entire sample. The average monthly incomes of Asians (Cz$35,492) and whites (Cz$21,111) are higher than the average income of the sample (Cz$19,047), while the average monthly income of Afro-Brazilians (Cz$10,775) is much lower than that of the sample. Of particular interest are the big gaps between Asians and the sample, and between Afro-Brazilians and the sample. The mean income of Asians is 1.86 times higher than that of the sample,

whereas the mean income of Afro-Brazilians is only 56.6% of the mean income of the entire sample.

Table 7.1
Mean Monthly Income of Men Ages 18-65 by Color Group, Metropolitan São Paulo, Brazil (1980)

Color Group	Mean	Std Dev	Cases	%
Asian	35,492	73,458	4,778	2.3
White	21,111	43,616	157,046	74.6
Afro-Brazilian	10,775	11,174	48,670	23.1
Total	19,047	39,947	210,493	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

When the three age groups are compared, the mean monthly income of the youngest group is much lower than those of the two older groups, as shown in Table 7.2. Specifically, the mean monthly income of the age group of 18-25 (Cz$9,410), is only 43.7% of the mean income of the age group of 26-39 (Cz$21,538), and only 37.7% of the mean income of the age group of 40-65 (Cz$24,946). Similarly, while the mean income of the youngest age group is far below the sample mean (Cz$19,047), the average incomes of the two older groups are above the sample mean. It is normal for people under 26 to have such a low mean income because most of them either do not have permanent jobs, or have just started their careers and lack work experience.

The income difference between urban and rural residents is also quite obvious; the mean monthly income of urban residents (Cz$20,104) is almost twice as much as that of their rural counterparts (Cz$10,349) (see Table 7.3). Since urban residents constitute about 90% of the sample, the mean monthly

income of the entire sample (Cz$19,047) is not greatly affected by the extremely low mean of rural residents. Furthermore, rural residents don't need as much money as urban dwellers do because living expenses, such as the cost of housing and food, are much cheaper in rural areas.

Table 7.2
Mean Monthly Income of Men Ages 18-65 by Age Group, Metropolitan São Paulo, Brazil (1980)

Age Group	Mean	Std Dev	Cases	%
18-25	9,410	6,264	62,956	29.9
26-39	21,538	33,186	77,324	36.7
40-65	24,946	57,769	70,213	33.4
Total	19,047	39,947	210,493	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Table 7.3
Mean Monthly Income of Men Ages 18-65 by Residence, Metropolitan São Paulo, Brazil (1980)

Residence	Mean	Std Dev	Cases	%
Urban	20,104	40,497	187,685	89.2
Rural	10,349	33,866	22,808	10.8
Total	19,047	39,947	210,493	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

The impact of education on income is predictably very great, as shown in Table 7.4. People with no schooling have a mean monthly income of only Cz$8,152, compared to a mean of Cz$13,978 for people with 1-4 years of schooling, a mean of Cz$17,948 for people with 5-8 years of schooling, a mean of Cz$25,940 for people with 9-11 years of schooling, and a mean of Cz$58,451 for people with 12 or more years of schooling. In minimum wages, the mean monthly income of people with no schooling is less than two minimum wages, that of people with 1-4 years of schooling is more than three minimum wages, that of people with 5-8 years of schooling is more than four minimum wages, that of people with 9-11 years of schooling is over six minimum wages, and the mean monthly income of people with 12 or more years of schooling is more than fourteen minimum wages. Although each higher educational level results in an increase of more than one minimum wage for the first three levels, the effect of 9-11 years of schooling and 12 or more years of schooling is extremely great, suggesting the importance of education beyond nine years of schooling as far as income is concerned.

Table 7.4
Mean Monthly Income of Men Ages 18-65 by Education,
Metropolitan São Paulo, Brazil (1980)

Years of Schooling	Mean	Std Dev	Cases	%
Zero	8,152	13,870	27,153	12.9
1-4	13,978	29,842	104,287	49.6
5-8	17,948	31,579	36,949	17.6
9-11	25,940	42,634	24,177	11.5
12+	58,451	82,060	17,565	8.4
Total	19,017	39,720	210,132	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

We can also compare the ratios between the mean incomes at various educational levels. People with 1-4 years of schooling have 1.71 times the income of those with no schooling, people with 5-8 years of schooling have 1.28 times the income of those with 1-4 years of schooling, people with 9-11 years of schooling have 1.45 times the income of those with 5-8 years of schooling, and people with 12 or more years of schooling have 2.25 time the income of those with 9-11 years of schooling.

The relationship between income and occupation is illustrated in Table 7.5. The occupations in the first two categories (managerial/administrative and professional/technical) enjoy much higher mean income than the others and they constitute the top level of the income strata, with clerical and transportation and communications occupations in the middle and with transformative and unskilled/personal service occupations at the bottom. Furthermore, while the mean monthly incomes of people with managerial/administrative occupations (Cz$55,7669) and with professional/technical occupations (Cz$45,932) is well above the sample mean (Cz$21,220), the mean monthly income of people with all the other occupations is well below the sample mean (see Table 7.5). The huge gap in income between people with managerial/administrative and professional/technical occupations and those with the other occupations suggests that the former belong to the upper class, while the latter belong either to the lower middle class or lower class.

There is no real middle class to speak of, according to this occupational classification. This is clear when we examine the ratios between the mean income of each of the occupational categories and the mean income of the entire sample. The mean monthly income of managerial/administrative and professional/technical occupations are 2.63 and 2.16 times of the mean

income of the entire sample (Cz$21,220). In contrast, the mean income of clerical occupations (Cz$18,059) and that of transportation/communications occupations (Cz$16,192) are 85.1% and 76.3%, respectively, of the sample mean, and the mean monthly incomes of unskilled/personal service occupations is only 58% of the sample mean.

Table 7.5
Mean Monthly Income of Men Ages 18-65 by Occupation, Metropolitan São Paulo, Brazil (1980)

Occupation	Mean	Std Dev	Cases	%
Managerial/ Administrative	55,769	106,083	17,608	10.5
Professional/ Technical	45,932	51,461	14,678	8.9
Clerical	18,059	21,119	22,167	13.3
Transportation/ Communication	16,192	15,764	13,888	8.3
Transformative	12,996	9,763	59,711	35.7
Unskilled/ Personal Service	12,501	23,846	38,996	23.3
Total	21,220	43,477	167,048	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Table 7.6 shows that the color differences in mean income at ages 18-25 are substantially smaller, while they are slightly bigger in most other cases, compared to what they are before the control of age group. For example, within the age group of 18-25, the difference between the mean monthly income of Asians and whites is only Cz$786, and the difference between the mean monthly income of whites and Afro-Brazilians is Cz$1,915. Although the difference between Asians and Afro-Brazilians (Cz$2,701) is a little bigger

than the above two figures, it is substantially smaller than the difference between the two before controlling for age group, which is Cz$24,717. This is also reflected in the ratios between the mean monthly incomes of Asians and whites, and of Asians and Afro-Brazilians shown in the last two columns of Table 7.6.

Table 7.6
Mean Monthly Income of Men Ages 18-65 by Age and Color, Metropolitan São Paulo, Brazil (1980)

Age Group	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
18-25	9,410	10,675	9,889	7,974	1.08	1.34
26-39	21,538	42,238	23,826	12,543	1.77	3.37
40-65	24,946	43,119	27,681	11,675	1.56	3.69
Total	19,047	35,492	21,111	10,775	1.68	3.29

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asians/whites, A/AB = Asians/Afro-Brazilians.

For the age group of 26-39, the income differences among the three groups increases slightly. For example, the ratios between Asians and whites and between Asians and Afro-Brazilians are now 1.77 and 3.37, respectively, compared to 1.68 and 3.29 before controlling for age group. For the age group of 40-65, the difference between Asians and whites is slightly smaller but the gap between Asians and Afro-Brazilians is wider than they are before the control of age. This can be seen from the changes in the ratios between these groups; the ratio between Asians and whites reduces to 1.56 from 1.68, and the ratio between Asians and Afro-Brazilians increases to 3.69 from 3.29. To sum

up, when age group is controlled, the color differences in mean income reduce substantially for the age group of 18-25, but increase slightly for the other age groups.

Table 7.7 shows that when residence is controlled, the color differences in income reduce slightly in urban areas but increase substantially in rural areas. For example, The ratios between Asians and whites (1.57) and between Asians and Afro-Brazilians (3.11) in urban areas are smaller than those before controlling for residence. However, mainly due to a moderate increase of Cz$3,738 in the mean income of rural Asians and a sharp decrease of about 50% in the mean income of both whites and Afro-Brazilians in rural areas, the differences among them have widened considerably, resulting in a ratio of 3.63 between Asians and whites, and a ratio of 5.74 between Asians and Afro-Brazilians. On the whole, residence does not seem to play a major role in explaining the income differences between Asians and the other two racial groups.

When educational level is controlled, the differences in mean income between Asians and the other two groups are wider at lower levels of education than they are before the control of education, but they decrease considerably at higher levels of education, as shown in Table 7.8. In other words, the income differences between Asians and whites, and between Asians and Afro-Brazilians become smaller at each higher educational level than they are at the previous levels. In fact, at the level of 9-11 years of schooling, the mean monthly incomes of Asians (Cz$27,649) and whites (Cz$26,984) are very close, and at the level of 12 or more years of schooling, the mean income of whites (Cz$59,972) surpasses that of Asians (Cz$53,573). This clearly demonstrates the importance of education beyond 12 years in terms of monetary reward, particularly for Asians and whites.

Table 7.7
Mean Monthly Income of Men Ages 18-65 by Residence and Color, Metropolitan São Paulo, Brazil (1980)

Age Group	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
Urban	20,104	35,110	22,353	11,292	1.57	3.11
Rural	10,349	38,848	10,707	6,769	3.63	5.74
Total	19,047	35,492	21,111	10,775	1.68	3.29

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asians/whites, A/AB = Asians/Afro-Brazilians

However, for Afro-Brazilians, the same amount of education does not result in the same amount of increase in their mean income as it does for Asians and whites. The mean income of Afro-Brazilians with 9-11 years of schooling (Cz$16,202) is only 58.6% that of Asians and 60% that of whites with the same education. Similarly, the mean income of Afro-Brazilians with 12 or more years of schooling is only 54.5% that of whites and 61% that of Asians in the same category. This is clear evidence of systematic discrimination against Afro-Brazilians in the Brazilian society. Nonetheless, it does not negate the importance of education, especially education beyond 12 or more years, because the mean income of both whites and Afro-Brazilians with 12 or more years of schooling more than doubles (and the mean income of Asians nearly doubles) what they are at the level of 9-11 years of schooling.

On the other hand, the gap between the mean monthly income of whites and Afro-Brazilians widens with the increase of education. For example, the ratio between the mean income of whites and Afro-Brazilians with no schooling is 1.11, while it increases to 1.40, 1.62, 1.67 and 1.84,

respectively, at the following higher educational levels. This suggests that whites receive increasingly higher returns for their investment in education, relative to Afro-Brazilians, with the increase of education.

Table 7.8
Mean Monthly Income of Men Ages 18-65 by Education and Color, Metropolitan São Paulo, Brazil (1980)

Years of Schooling	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
None	8,152	29,842	8,259	7,437	3.61	4.01
1-4	13,983	32,043	14,877	10,623	2.67	3.43
5-8	17,949	29,730	19,280	11,934	1.75	2.63
9-11	25,939	27,649	26,984	16,202	1.02	1.71
12+	58,487	53,573	59,972	32,676	0.89	1.64
Total	19,025	35,492	21,111	10,775	1.68	3.29

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asians/whites, A/AB = Asians/Afro-Brazilians.

When the color groups are compared in terms of mean monthly income within each of the six major occupational categories, Asians and whites are similar in most cases, and Afro-Brazilians continue to lag behind the other two in every category, suggesting the existence of discrimination against Afro-Brazilians in all major occupational categories (see Table 7.9). The differences between Asians and whites are greater in blue collar occupations than in white collar ones, as shown in the last but one column of Table 7.9. Specifically, the highest ratio between the mean income of Asians and that of whites (2.50) is found in unskilled/personal service occupations, and the lowest ratio (1.05) is found in professional/technical occupations. A

ratio of 2.50 between Asians and whites in this instance means that the mean income of Asians is 2.5 times that of whites. The main reason for the bigger income difference between Asians and whites in unskilled/personal service occupations is that a higher percentage of Asians in this category are engaged in more profitable occupations, such as "self-employed small business," "autonomous producers in agriculture and fishing" and "mobile sellers," as described in Chapter 6. The lower income disparity between Asians and whites with professional/technical occupations is probably due to the similar characteristics and qualifications of all people in this category, regardless of color.

The biggest income disparity between Asians and Afro-Brazilians is also found in unskilled/personal service occupations, followed by occupations in managerial/administrative and professional/technical, and the smallest disparity is found in transformative occupations. The mean income of Asians with unskilled/personal service occupations (Cz$32,890) is more than 4 times that of Afro-Brazilians (Cz$8,109) with the same occupations; the mean income of Asians with managerial/administrative occupations (Cz$69,619) and with professional/technical occupations (Cz$51,022) are, respectively, 2.79 and 2.27 times of those of Afro-Brazilians (Cz$24,943 and Cz$22,515). The main reason for the relatively high mean income of Asians with unskilled/personal service occupations is described above. The bigger disparity between the mean incomes of Asians and Afro-Brazilians in managerial/administrative and professional/technical occupations may be related to the fact that more Asians are at the higher end and a disproportionate number of Afro-Brazilians are at the lower end of the two occupational categories. This is an illustration of the disadvantaged status of Afro-Brazilians, even when they obtain white collar occupations.

Table 7.9
Mean Monthly Income of Men Ages 18-65 by Occupation and Color, Metropolitan São Paulo, Brazil (1980)

Occupation	Total	Asian	White	Afro-B*	Ratio A/W**	Ratio A/AB**
Management/ Administrative	55,771	69,619	57,572	24,943	1.21	2.79
Professional/ Technical	45,946	51,022	48,416	22,515	1.05	2.27
Clerical	18,057	22,398	19,046	12,223	1.18	1.83
Transportation/ Communication	16,198	27,081	16,792	13,594	1.61	1.99
Transformative	12,999	20,160	13,779	11,176	1.46	1.80
Unskilled/ Personal Service	12,502	32,890	13,144	8,109	2.50	4.06
Total	19,025	35,492	21,111	10,775	1.68	3.29

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/whites, A/AB = Asians/Afro-Brazilians.

When whites and Afro-Brazilians are compared, controlling for occupation, the disparity between them are generally greater in white collar occupations than in blue collar occupations. The mean incomes of whites with managerial/administrative occupations (Cz$57,572) and with professional/technical occupations (Cz$48.416) are, respectively, 2.31 and 2.15 times that of Afro-Brazilians with the same occupations (Cz$24,943 and Cz$22,515). The smallest disparity between the two is found in transformative and transportation/communications occupations (only 1.23 and 1.24), suggesting a lesser degree of discrimination against Afro-Brazilians in these occupations.

In order to measure and compare the effects of the independent variables on the mean income of men ages 18-65, while controlling for one or more variables simultaneously, I developed five separate regression models (see Table 7.10). Model 1, which has only one variable, age, tells us two things: 1) The coefficient of age means that a one-year increase in age results in an increase of Cz$561 in mean income for the sample, and 2) the R^2 of the model indicates that age explains only 2.34% of the variation in income for the sample. Based on this information, we can estimate that a 25-year old man would have a mean income of Cz$15,984 (Y = 1,929 + (25 x 561) = 15,984), and a 40-year old man would have a mean income of 24,399 cruzeiros (Y = 1,929 + (40 x 561) = 24,399). However, these estimates may not be reliable since age accounts for only 2.3% of the total variation in income.

Model 2 has two variables, age and education. The coefficient of education in this model shows that education has great positive effect on income, and the coefficient of age increases considerably, compared to the first model. Specifically, the coefficients of education and age can be interpreted as follows; a one-year increase in education results in an increase of Cz$6,856 in mean income, and a one-year increase in age amounts to an increase of Cz$864 in mean income. More importantly, the R^2 in Model 2 increases to 11.65%, a gain of more than 9% from Model 1. This means that education accounts for more than 9% of the total variation in income that is not explained by age. According to this model, a 25-year old man with 4 years of schooling would have a mean income of Cz$14,207 (Y = -34,817 + (25 x 864) + (4 x 6,856) = 14,207).

Model 3 has three variables, age, education and residence. Since residence is a dichotomous variable (urban vs. rural), urban area is treated as the reference, to which rural area is compared. The coefficient of the dummy

variable for rural areas indicates that the mean income of rural residents is Cz$2,190 less than that of urban residents, after controlling for age and education. At the same time, we see that the coefficient of age remains almost the same as in Model 2 (864 in Model 2 vs. 862 in Model 3) and the coefficient of education decreases slightly from 6,856 in Model 2 to 6,761 in Model 3, where residence is introduced. Furthermore, there is almost no change in the R^2 from Model 2 to Model 3, suggesting that after controlling for age and education, residence explains very little of the variation in income. According to this model, a 25-year old man with 4 years of schooling in a rural area would have a mean income of Cz$12,281 (Y = -34,098 + (25 x 861) + (4 x 6,761) -2,190 = 12,281), while the same person in a urban area would have a mean income of Cz$14,471, which is the mean income of a rural person (Cz$12,281) plus the income difference between urban and rural residents (Cz$2,190).

Model 4 includes the dummy variables for the color groups, in addition to those already in Model 3. Whites are treated as the reference group here. There are slight decreases in the coefficients of age and education, indicating similar degrees of decreases in the effects of these variables on mean income, when the color variables are introduced into the model. However, the absolute value of the coefficient of residence increases from -2,190 in Model 3 to -2,513 in Model 4, suggesting a greater income disparity between urban and rural residents, after controlling for age, education and color. The negative coefficient of the dummy variables for Afro-Brazilians means that the mean income of Afro-Brazilians is Cz$3,709 less than that of whites, and the positive coefficient of Asians means that the mean income of Asians is Cz$7,913 more than that of whites, other things being equal. A mere increase of .0019 in the R^2 from Model 3 to Model 4 indicates that the color

variables are responsible for only about 2% of the variation in income that is unexplained by age, education and residence. According to this model, the average income of 40-year old Afro-Brazilians with 4 years of schooling in rural areas would be Cz$21,700 (Y = -31,430 + (40 x 836) + (4 x 6,478) - 2,513 - 3,709 = 21,700), and the average income of Asians with the same qualifications would be Cz$33,322 (Y = -31,430 + (40 x 6,478) - 2,513 + 7,913 = 33,322).

Model 5 includes the dummy variables for occupations, in addition to the variables already in Model 4. As expected, we see substantial decreases in the coefficients of age, education, and the color variables, suggesting that the effects of these variables on income reduce greatly after the dummy variables for occupational categories are introduced into the model. Specifically, the coefficient of age reduce by about 24% to 638; the coefficient of education reduce by 32% to 4,429; the coefficient of Afro-Brazilians (as opposed to whites) reduce by about 39% to -2,277; the coefficient of Asians (as opposed to whites) reduce by about 29% to 6,459. The coefficient of rural areas (as opposed to urban areas), on the contrary, increases slightly from 2,513 in Model 4 to 2,572 in Model 5, suggesting a slightly bigger income disparity between urban and rural areas, after controlling for occupation.

The category of clerical occupations is treated as the reference group in Model 5 because the mean income of this category is the closest to the sample mean according to the descriptive analysis. However, it turns out that, when age, education, residence and color are controlled simultaneously, clerical occupations have the lowest mean income. Specifically, controlling for the other independent variables, the average incomes of people with managerial/administrative, professional/technical, transportation/communications, transformative, and unskilled/personal service occupations are, respectively, 31,532, 20,521, 1,364, 1,140 and 899

cruzeiros higher than that of people with clerical occupations. The R^2 of Model 5 increases by .0475 to .1664 in Model 5 from .1189 in Model 4. This means that the occupational variables account for about 5% of the total variation that is unexplained by the other variables in Model 4.

We can also estimate the mean income of Afro-Brazilians and Asians with various occupations, based on the information in Model 5. For instance, if an 40-year old Afro-Brazilian man with 4 years of schooling in rural areas has a managerial/administrative occupation, his mean income would be Cs$47,029 (Y = -22,890 + (40 x 638) + (4 x 4,429) - 2,572 - 2,277 + 31,532 = 47,029), while an Asian with the same qualifications would have a mean income of Cz$55,765 (Y = -22,890 + (40 x 638) + (4 x 4,429) - 2,572 +6,459 + 31,532 = 55,765). The mean income of a white man in the same situation would be Cz$49,306, which is the mean income of either Afro-Brazilians or Asians plus or minus the difference between them and whites. Similarly, while the mean income of an Asian who has 4 years of schooling, lives in rural areas and has an unskilled/personal service occupation would be Cz$25,132, the mean income of a 40-year old Afro-Brazilian with the same qualifications would be Cz$16,396, and the mean income of a white man in the same situation would be Cz$18,673.

Table 7.10
Monthly Income of Men Ages 18-65 Regressed on Age, Education, Residence, and Color, Metropolitan São Paulo, Brazil (1980)

Independent Variable	Model 1	2	3	4	5
Age	561	864	861	836	638
Education		6,856	6,761	6,478	4,429
Residence					
Urban*			-------	------	-------
Rural			-2,190	-2,513	-2,572
Color					
White*				-------	------
Afro-Brazilian				-3,709	-2,277
Asian				7,913	6,459
Occupation					
Man/Adm**					31,532
Prof/Tech**					20,521
Clerical*					-------
Transp/Comm**					1,364
Transformative					1,140
Unskilled/PS**					***899
R^2	.0234	.1165	.1168	.1189	.1664
Constant	1,959	-34,817	-34,098	-31,430	-22,890

*These are the reference groups, to which the other variable(s) of the same category are compared.

**These occupations are abbreviated. They are:
man/adm = managerial/administrative
prof/tech = professional/technical
transp/comm = transportation/communications
unskilled/PS = unskilled/personal service

***P-value = .0160. P-values for all the other coefficients < .01.

Mean Income of Women Ages 18-65

The sample data of women ages 18-65 show that the mean monthly income of Brazilian women is only Cz$4,461, which is slightly more than one minimum wage (Cz$4,150) and less than one fourth of the average income of their men counterparts (Cz$19,047). However, there are many variations by color, age, educational level, residence and occupation. As Table 7.11 shows, Asian women's mean monthly income is Cz$7,261, compared to Cz$4,783 for white women and Cz$3,030 for Afro-Brazilian women. In other words, the mean monthly income of Asian women is more than 1.5 times that of white women and about 2.4 times that of Afro-Brazilian women.

Table 7.11
Mean Monthly Income of Women Ages 18-65 by Color Group, Metropolitan São Paulo, Brazil (1980)

Color Group	Mean	Std Dev	Cases	%
Asian	7,261	14,233	4,517	2.1
White	4,783	13,854	160,971	76.5
Afro-Brazilian	3,030	5,186	45,015	21.4
Total	4,461	12,552	210,503	100.0

Source: Weighted 3% sample data of metropolitan São Paulo, 1980 Brazilian Census.

As shown in Table 7.12, the age differences in income among women are much smaller than they are among men (see Table 7.2), probably due to the extremely low average income for all women. The mean income of women ages 18-25 is only Cz$3,855, which is below one minimum wage (Cz$4,150), and the mean income of the two older age groups are Cz$4,901 and

Cz$4,507, respectively. Interestingly, it is the age group of 26-39, not the age group of 40-65, that has the highest mean income. This is mainly because women ages 26-39 were better educated than those ages 40-65 and they have been in the labor force long enough to develop some seniority of pay. In comparison, the mean income of men increases from younger to older age groups (see Table 7.2), and the oldest age group has the highest mean income.

Table 7.12
Mean Monthly Income of Women Ages 18-65 by Age Group, Metropolitan São Paulo, Brazil (1980)

Age Group	Mean	Std Dev	Cases	%
18-25	3,855	8,346	62,668	29.7
26-39	4,901	11,389	76,496	36.2
40-65	4,507	16,192	71,971	34.1
Total	4,456	12,538	211,134	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

The income difference between urban and rural residents is quite big as well, in spite of the relatively low mean income for all women. On the average, urban women have an income of Cz$4,797, which is more than four times the mean income of rural women (Cz$1,082), as shown in Table 7.13. This indicates that the vast majority of rural women do not have income of their own, and they are at the bottom of the society in terms of income.

Just like men's mean income, women's mean income is closely correlated with the amount of education they have received, i.e., women who received more years of schooling have higher income. The mean income of women with no schooling is only Cz$1,563, which is less than 40% of one

minimum wage; the mean income of women with 1-4 years of schooling is only Cz$2,606, which is about 63% of one minimum wage; and the mean income for women with 4-8 years of schooling is Cz$4,576, which is just above one minimum wage. On the other hand, the mean income of women with 9-11 years of schooling (Cz$8,657) is almost double the mean income of those with 4-8 years of schooling, and the mean income of women with 12 or more years of schooling (Cz$17,635) is more than double that of those with 9-11 years of schooling. The increase of mean income, especially at higher educational levels (more than 9 years of schooling), illustrates the strong positive impact of education on women's average income.

Table 7.13
Mean Monthly Income of Women Ages 18-65 by Residence, Metropolitan São Paulo, Brazil (1980)

Residence	Mean	Std Dev	Cases	%
Urban	4,797	13,024	191,767	90.8
Rural	1,082	4,667	19,367	9.2
Total	4,456	12,538	211,134	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Meanwhile, a comparison of men's and women's mean income by educational level reveals that the same amount of education does not result in the same amount of income for men and women, and there is a huge gap between the mean income of men and women with the same education. For example, at the first two educational levels, men's income is more than five times that of women's and at the three higher levels, men's income is more than three times that of women's. More specifically, the mean income of

men without any schooling (Cz$8,152) is 1.78 times higher than the mean income of women with 5-8 years of schooling (Cz$4,576) and almost as high as the mean income of women with 9-11 years of schooling (Cz$8,657); the mean income of men with 5-8 years of schooling (Cz$17,948) is higher than the mean income of women with 12 or more years of schooling (Cz$17,635). This shows that there is a great deal of disparity between the income of men and women in Brazil, even if they have the same amount of education.

Table 7.14
Mean Monthly Income of Women Ages 18-65 by Education, Metropolitan São Paulo, Brazil (1980)

Years of Schooling	Mean	Std Dev	Cases	%
Zero	1,563	4,923	36,664	17.4
1-4	2,606	6,668	102,314	48.6
5-8	4,576	9,500	33,084	15.7
9-11	8,657	22,399	24,262	11.5
12+	17,635	25,097	14,246	6.8
Total	4,448	12,543	210,570	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

The mean income of women in the six major occupational categories are listed in Table 7.15. The distribution of income by occupation shows three distinctive levels of income: the top level is made up of managerial/administrative and professional/technical occupations, with a mean income of Cz$29,670 and Cz$19,405, respectively; the middle level is made up of clerical and transportation/communications occupations, with a mean income of Cz$11,995 and Cz$9,690, respectively; and the bottom level is

made up of the remaining two occupational categories, with a mean income of Cz$6,936 for transformative occupations and Cz$5,717 for unskilled/personal service occupations. The top level of income is about two to three times the average income of the sample (Cz$10,488), the middle level of income is about the sample mean, and the bottom level of income is far below the sample mean.

Table 7.15
Mean Monthly Income of Women Ages 18-65 by Occupation, Metropolitan São Paulo, Brazil (1980)

Occupation	Mean	Std Dev	Cases	%
Managerial/ Administrative	29,670	40,105	3,093	4.2
Professional/ Technical	19,405	17,776	10,805	14.6
Clerical	11,995	15,462	18,205	24.6
Transportation/ Communication	9,690	7,126	139	0.2
Transformative	6,936	4,608	12,923	17.5
Unskilled/ Personal Service	5,717	7,860	28,742	38.9
Total	10,488	15,454	73,906	100.0

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

Compared to men's income with the same occupations, women have much lower income in all categories: In managerial/administrative occupations, women's income is 53.2% of men's; in professional/technical occupations, women's income is 42.2% of men's; in clerical occupations, women's income is 66.4% of men; in transportation/communications occupations, women's income is 59.8% of men's; in transformative

occupations, women's income is 53.4% of men's; and in unskilled/personal service occupations, women' income is 45.7% of men's. Relatively speaking, the gap between men's and women's income is the biggest in professional/technical occupations and the smallest in clerical occupations. The bigger disparity in professional/technical occupations may be related to the fact that this category covers occupations with a wide range of income, and more men than women have higher-paying jobs. This is, however, no justification for the bigger disparity because men and women in this category tend to have more comparable educational levels and a higher percent of women (14.6% of all women vs. 8.9% of all men) have these occupations. On the other hand, the smaller disparity between men's and women's income in clerical occupations are mainly due to the smaller range of income associated with these occupations, and a higher percent of women (24.6% of all women) than men (13.3% of all men) who have these occupations.

So far, I have described the income differences of Brazilian women by color, age, education, residence and occupation. In the following, I will describe the income differences among the three color groups by age group, educational level, residence and occupational category. Table 7.16 compares the mean income of women by age group and color group. We see a mixed result here; the gap between the mean income of Asians and whites widens for the two younger age groups and narrows for the age group of 40-65, and the gap between the mean income of Asians and Afro-Brazilians widens at the age of 26-39 and narrows for the other two age groups.

Specifically, the ratio between the mean income of Asians and whites increases from 1.52 before controlling for age to 1.66 and 1.83 for the first two age groups, but decreases to 1.07 for the age group of 40-65. Meanwhile, the ratio between the mean income of Asians and Afro-Brazilians decreases from

2.40 before the control of age to 2.15 for the age group of 18-25 and to 1.97 for the age group of 40-65, but increases to 2.98 for the age group of 26-39. In other words, the color differences in income are the biggest for people ages 26-39 and the smallest for people above 40.

Table 7.16
Mean Monthly Income of Women Ages 18-65 by Age and Color, Metropolitan São Paulo, Brazil (1980)

Age Group	Sample	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
18-25	3,858	6,692	4,034	3,118	1.66	2.15
26-39	4,908	9,618	5,260	3,226	1.83	2.98
40-65	4,513	5,266	4,912	2,673	1.07	1.97
Total	4,461	7,261	4,783	3,030	1.52	2.40

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asians/whites, A/B = Asians/Afro-Brazilians.

Table 7.17 show that the income difference between Asians and whites increases slightly in both urban and rural areas, and the difference between Asians and Afro-Brazilians increases slightly in urban areas, but decreases considerably in rural areas. For instance, the ratio between the mean income of Asians and whites increases by 0.01 to 1.53 in urban areas, and the ratio between the two increases by 0.16 to 1.68 in rural areas; the ratio between the mean incomes of Asians and Afro-Brazilians increases from 2.40 before controlling for residence to 2.43 in urban areas, but decrease sharply to 1.55 in rural areas (see Table 7.17).

It is particularly important to point out that the mean income of rural Afro-Brazilians (Cz$1,135) actually surpasses that of rural whites (Cz$1,046). This tells us that the income difference between whites and Afro-Brazilians is much smaller in rural areas than it is in urban areas, and Afro-Brazilian women fare a little better than their white counterparts in rural areas.

Table 7.17
Mean Monthly Income of Women Ages 18-65 by Residence and Color, Metropolitan São Paulo, Brazil (1980)

Residence	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
Urban	4,803	7,872	5,152	3,236	1.53	2.43
Rural	1,083	1,762	1,046	1,135	1.68	1.55
Total	4,461	7,261	4,783	3,030	1.52	2.40

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asians/whites, A/AB = Asians/Afro-Brazilians.

As shown in Table 7.18, the income differences between the three color groups decrease significantly when educational level is controlled, particularly at higher levels. This indicates a strong positive effect of education on women's income. For people with no schooling, the mean income of Asians is, respectively, 1.71 and 1.47 times the mean income of whites and Afro-Brazilians; for those with 1-4 years of schooling, the mean income of Asians is, respectively, 1.3 and 1.24 times of that of whites and Afro-Brazilians. At the level of 5-8 years of schooling, the ratio between Asians and whites further reduce to 1.18, while the ratio between Asians and Afro-Brazilians increases slightly to 1.33; At the level of 9-11 years of

schooling, the ratios between Asians and whites and between Asians and Afro-Brazilians are, respectively, 0.93 and 1.25. At the highest level of 12 or more years of schooling, the mean income of Asians and whites are almost identical (Cz$17,788 for Asians and Cz$17,728 for whites), and the mean income of Afro-Brazilians (Cz$16,228) is more than 90% of that of Asians.

Table 7.18
Mean Monthly Income of Women Ages 18-65 by Education and Color, Metropolitan São Paulo, Brazil (1980)

Years of Schooling	Total	Asian	White	Afro-Brazilian	Ratio A/W*	Ratio A/AB*
None	1,563	2,518	1,469	1,717	1.71	1.47
1-4	2,609	3,331	2,569	2,689	1.30	1.24
5-8	4,576	5,495	4,665	4,128	1.18	1.33
9-11	8,665	8,283	8,887	6,818	0.93	1.25
12+	17,669	17,788	17,728	16,228	1.00	1.09
Total	4,453	7,261	4,783	3,030	1.52	2.40

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*A/W = Asians/whites, A/AB = Asians/Afro-Brazilians.

On the other hand, if we compare the mean incomes of whites and Afro-Brazilians by educational level, we find a somewhat different pattern; the mean income of Afro-Brazilians is slightly more than that of whites at the first two educational levels, and the mean income of whites is more than that of Afro-Brazilians at the remaining higher levels. This suggests that at five or more years of schooling, whites enjoy a more favorable monetary return than do Afro-Brazilians for the same amount of education. In short, although Afro-Brazilians fare a little better than do whites at less than five years of

schooling, they fall behind whites at higher educational levels. However, the gap between whites and Afro-Brazilians at the level of 12 or more years of schooling is narrower than it is at the two previous levels. This again suggests that Afro-Brazilians face more discrimination at 5-11 years of schooling, but once they have 12 or more years of schooling, they face less discrimination in the job market.

When the mean incomes of Asian, white and Afro-Brazilian women are compared, controlling for occupation, Asian women lead white women in most categories, and Afro-Brazilians continue to fall behind both Asians and whites in all categories. White women have advantage over Asian women in two of the six categories. As Table 7.19 shows, the mean income of Asian women with managerial/administrative occupations (Cz$29,645) is 97% of that of white women with the same occupations (Cz$30,663), and the mean income of Asians with transportation/communications occupations (Cz$9,000) is 85% of the mean income of whites with the same occupations (Cz$10,596).

The biggest gap between the mean income of Asians and whites is found in unskilled/personal service occupations, where the mean income of Asians is 1.91 times that of whites. And the gap between them in professional/technical occupations is the second biggest; Asians' mean income is 1.35 times that of whites. The occupations where the mean income of Asians and whites are most similar are managerial/administrative and clerical ones, with a ratio of 0.97 between the two in the former and a ratio of 1.12 between the two in the latter. On the whole, the income disparity between Asians and whites is bigger in blue collar occupations than in white collar ones.

The income disparity between Asians and Afro-Brazilians is the biggest in unskilled/personal service occupations, followed by professional/technical and managerial/administrative occupations. For example, the mean income of Asians in these three occupational categories are, respectively, 2.38, 2.08 and 1.53 times that of Afro-Brazilians. The smallest income disparity between Asians and Afro-Brazilians is in transportation/communications and transformative occupations, where Asians' mean income is 1.24 times that of Afro-Brazilians in the former and 1.38 times that of Afro-Brazilians in the latter. In general, we can say that the income disparity between Asians and Afro-Brazilians is bigger in white collar occupations than in blue collar ones, with the exception of unskilled/personal service occupations.

Table 7.19
Mean Monthly Income of Women Ages 18-65 by Occupation and Color, Metropolitan São Paulo, Brazil (1980)

Occupation	Total	Asian	White	Afro-B*	Ratio A/W**	Ratio A/AB**
Managerial/ Administrative	29,690	29,645	30,663	19,288	0.97	1.53
Professional/ Technical	19,406	26,847	19,827	12,894	1.35	2.08
Clerical	11,999	13,798	12,373	9,146	1.12	1.51
Transportation/ Communications	9,690	9,000	10,596	7,276	0.85	1.24
Transformative	6,937	9,108	7,031	6,587	1.29	1.38
Unskilled/ Personal Service	5,717	11,642	6,104	4,900	1.91	2.38

Source: Weighted 3% sample data of Metropolitan São Paulo, 1980 Brazilian Census.

*Afro-B = Afro-Brazilians
**A/W = Asians/whites, A/AB = Asians/Afro-Brazilians.

As with men's data, I ran five separate regression analyses to measure and compare the effects of the independent variables on the mean income of women ages 18-65 (see Table 7.20). Model 1 measures the effect of age on the mean income of women. It shows that age has a positive (though small) effect on the income of women and that age explains only 1.61% (R^2 of the model) of the total variance in women's income. Specifically, the coefficient of age means that a one-year increase in age amounts to an increase of Cz$181 in income. For instance, according to this model, the average income of 25-year old women is estimated at Cz$9,328 (Y = 4,803 + (25 x 181) = 9,328), and the average income of 40-year old women is estimated at Cz$12,043 (Y = 4,803 + (40 x 181) = 12,043). However, these estimates may not be reliable since age accounts for only 1.61% of the variation in income.

Model 2, which includes two variables, age and education, shows that education has tremendous positive effect on the income of women and the effect of age almost doubles, when education is introduced into the model. Specifically, the coefficient of age and education can be interpreted as follows; a one-year increase in age results in an increase of Cz$346 in income, and a one-year increase in schooling amounts to an increase of Cz$2,885 in income. More importantly, the R^2 in Model 2 increases to .1536, a gain of .1375 from Model 1. This means that education explains more than 13% of the variance in income that is not explained by age. According to this model, 25-year old women with 4 year of schooling would have a mean income of Cz$7,709 (Y = -12481 + (25 x 346) + (4 x 2,885) = 7,709).

Model 3 has a new variable, residence, in addition to age and education. Since residence is a dichotomous variable (urban vs. rural), urban area is treated as the reference, to which rural area is compared. We see very little changes in the coefficients of age and education, suggesting little

covariation between age, education and residence. In another words, they are independent of one another, as far as their impact on income is concerned. The negative coefficient of rural area indicates that the average income of rural women is Cz$1,491 less than that of urban women, other things being equal. There is almost no change in the R^2 of Model 3. This means that with age and education already controlled, residence explains virtually no additional variation in income. In other words, Model 2 is as good as Model 3 in explaining the total variance of income, if we are not concerned with the income difference between urban and rural residents. This model estimates that the mean income of 25-year old women with 4 years of schooling would be Cz$6,311 in a rural area, and Cz$7,802 in urban areas.

Model 4 includes the dummy variables for the color groups, in addition to age, education and residence. When the color variables are introduced, the coefficients of age and education reduce slightly, indicating minor decreases in the effects of these variables on income. However, the coefficient of residence (rural) increases somewhat, suggesting the increased negative effect of rural areas on income. In another words, the income difference between urban and rural women increases, controlling for age, education and color simultaneously. The negative coefficient of Afro-Brazilians means that their mean income is Cz$1,615 less than that of whites, and the positive coefficient of Asians means that their mean income is Cz$2,292 more than that of whites, other things being equal. There is a mere increase of .0025 in the R^2 from Model 3 to Model 4. This indicates that the color variables explain only .25% of the variation in income that is not explained by age, education and residence. Thus, we can say that Model 3, which does not include the color variables, is just as good as Model 4, which includes the color variables, in explaining the variation in income of women.

According to this model, the mean income of 25-year old Afro-Brazilian women with 4 years of schooling would be Cz$4,990 in rural areas, and Cz$6,641 in urban areas; the mean income of Asians with the same qualifications is Cz$8,897 in rural areas and Cz$10,548 in urban areas; the mean income of white women with the same qualifications would be Cz$6,605 in rural areas and Cz$8,256 in urban areas.

Model 5, the full model, has all the variables, including the occupational variables. The coefficients of age, education, residence (rural areas) and Afro-Brazilian in Model 4, reduce considerably in Model 5, while the coefficient of Asian drops slightly in Model 5. These big reductions in coefficients mean that when the occupational variables are introduced into the model, the effects of age, education, residence and being Afro-Brazilian on mean income reduce significantly. To be specific, the effect of age decreases by about 21% (336 in Model 4 vs. 264 in Model 5); the effect of education drops by 73.3% (2732 in Model vs. 1730 in Model 5); the (negative) effect of residence (rural areas) reduces by about 21% (-1651 in Model 4 vs. -1301 in Model 5); the (negative) effect of being Afro-Brazilian (as opposed to being white) reduces by about 45% (-1615 in Model 4 vs. -889 in Model 5). In contrast, the effect of being Asian, as opposed to being white, reduces only by 3% (2292 in Model 4 vs. 2214 in Model 5), after the introduction of the occupational variables into the model.

The coefficients of the occupational variables in Model 5 show the differences between the mean incomes of these occupations and that of clerical occupations, which are treated as the reference group. For example, other things being equal, the mean incomes of managerial/administrative and professional/technical occupations are, respectively, Cz$15,201 and Cz$4,454 more than that of clerical occupations, while the mean incomes of

transportation/communications, transformative and unskilled/personal service occupations are, respectively, Cz$725, Cz$2,657 and Cz$3,069 less than that of clerical occupations. Note that the p-value for the coefficient of transportation/communications occupations is .5371. This suggests that the difference between the mean income of this category and that of the reference group (clerical occupations) is not significantly different. Finally, we see an increase of .0535 in the R^2 of Model 5, compared to Model 4. This indicates that the occupational variables explain more than 5% of the variance that is not explained by the other variables in model. Thus, the full model with all the variables explains 21% of the total variation in income. According to this model, the average income of 25-year old Afro-Brazilian women who have 4 years of schooling and a managerial/administrative occupation would be Cz$22,088 in rural areas and Cz$23,389 in urban areas, while the average income of Asian women with the same qualifications would be Cz$23,413 in rural areas and Cz$24,714 in urban areas, and the mean income of white women in the same situation would be Cz$21,199 in rural areas and Cz$22,500 in urban areas.

Table 7.20
Monthly Income of Women Ages 18-65 Regressed on Age, Education, Residence, and Color, Metropolitan São Paulo, Brazil (1980)

Independent Variable	Model 1	2	3	4	5
Age	181	346	344	336	264
Education		2,885	2,854	2,732	1,730
Residence					
Urban*			-------	-------	-------
Rural			-1,491	-1,651	-1,301
Color					
White*				------	-------
Afro-Brazilian				-1,615	-889
Asian				2,292	2,214
Occupation					
Man/Adm**					15,201
Prof/Tech**					4,454
Clerical*					-------
Transp/Com**					***-725
Transformative					-2,657
Unskilled/PS**					-3,069
R^2	.0161	.1536	.1540	.1565	.2100
Constant	4,803	-12,481	-12,214	-11,072	-4,443

*These are the reference groups, to which the other variable(s) of the same category are compared.

**These occupations are abbreviated. They are:
man/adm = managerial/administrative
prof/tech = professional/technical
transp/comm = transportation/communications
unskilled/PS = unskilled/personal service

***P-value = .5371. P-values for all the other coefficients <.0000.

Summary

The mean monthly income of men ages 18-65 in metropolitan São Paulo, Brazil varies by color, age, residence, education and occupation. The mean income of Asian men (Cz$35,492) is 1.5 times that of whites (Cz$21,111) and more than 3 times that of Afro-Brazilians (Cz$10,775). The age differences in income are expectedly obvious too; the age group of 18-25 have the lowest mean income (Cz$9,410), the age group of 26-39 have a mean income of Cz$21,538, and the age group of 40-65 have the highest mean income (Cz$24,946). The mean income of urban residents (Cz$20,104) is almost twice as much as that of rural residents (Cz$10,349).

The educational differences in income are huge, ranging from a mean of Cz$8,152 for those with no schooling to a mean of Cz$58,451 for those with 12 or more years of schooling. However, the income differences are not very big at lower educational levels (below 8 years of schooling) but they become extremely big at higher educational levels; the mean monthly income of those with 12 or more years of schooling (Cz$58,451) is 2.25 times that of those with 9-11 years of schooling.

Similarly, there are huge income differences among people with different occupations. The mean monthly income of those with managerial/administrative occupations (Cz$55,769) and those with professional/technical occupations (Cz$45,932) are, respectively, 4.46 and 3.67 times that of those with unskilled/personal service occupations (Cz$12,501). Meanwhile, the mean monthly incomes of those with clerical occupations (Cz$18,059), transportation/communications occupations (Cz$16,192), and transformative occupations (Cz$12,996) are below the sample mean (Cz$21,220).

When age group is controlled, the income differences among the three color groups reduce substantially in the age group of 18-25, but increase in most other cases. For the age group of 18-25, the difference between the mean income of Asians and that of whites is only Cz$786 and the same difference between Asians and Afro-Brazilians is Cz$2,701. The color differences in income are the greatest for the age group of 26-39; the mean incomes of Asians, whites and Afro-Brazilians are, respectively, Cz$42,238, Cz$23,826 and Cz$12,543. In each age group, Asians have the highest mean income and Afro-Brazilians have the lowest mean, with whites in the middle.

The income differences among the three color groups reduce slightly in urban areas, but increase substantially in rural areas, when residence is controlled. In urban areas, the mean incomes of Asians, whites and Afro-Brazilians are, respectively, Cz$35,110, Cz$22,353 and Cz$11,292. In contrast, the mean income of rural Asians (Cz$38,848) is 3.63 times that of rural whites (Cz$10,707) and 5.74 times that of rural Afro-Brazilians (Cz$6,769).

When educational level is controlled, the income differences between Asians and the other two groups are wider at lower levels of education (below 8 years of schooling), but decrease considerably at higher levels of education. At the level of 9-11 years of schooling, Asians and whites have about the same mean income (Cz$27,649 for Asians and Cz$26,984 for whites), and at the level of 12 or more years of schooling, the mean income of whites (Cz$59,972) is even higher that of Asians (Cz$53,573). The ratios between the mean income of Asians and Afro-Brazilians at 9-11 years of schooling and at 12 or more years of schooling reduce to 1.71 and 1.64 from a ratio of 3.29 before the control of education. Unfortunately, the gaps between Afro-Brazilians and the other two groups beyond 9 years of schooling are still too big; the mean income of Afro-Brazilians is around 60% of those of whites and Asians.

This is clear evidence of systematic discrimination against Afro-Brazilians in Brazil.

Controlling for occupation, the income differences among the three color groups reduce considerably, except for the difference between Asians and the other two in unskilled/personal service occupations. Due to the fact that a higher proportion of Asians with unskilled/personal service occupations have more profitable jobs, such as "self-employed small business," "autonomous producers in agriculture and fishing" and "mobile seller," their mean income (Cz$32,890) is much higher than that of whites (Cz$13,144) and that of Afro-Brazilians (Cz$8,109). Apart from the category of unskilled/personal service occupations, the income difference between Asians and whites is smaller in white collar occupations than it is in blue collar occupations, and the income difference between Asians and Afro-Brazilians is smaller in blue collar occupations than it is in white collar ones.

Although the income differences among the color groups become smaller after the control of occupation, Asians still have the highest mean income and Afro-Brazilians have the lowest mean income, with the mean income of whites in the middle, in every category. In particular, the mean income of Afro-Brazilians with managerial/administrative occupations is only 35.8% of that of Asians and 43.3% of that of whites. The mean income of Afro-Brazilians with professional/technical occupations is only 44.1% of that of Asians and 46.5% of that of whites. These huge income disparities between Afro-Brazilians and the other groups once again illustrate the disadvantaged status of Afro-Brazilians, even when they manage to obtain good jobs.

The regression models quantitatively show the effect of each of the independent variables on men's income. The effect is expressed in three ways; 1) the nature (positive or negative) of the effect, 2) the amount of

change (in cruzeiros) per one unit increase in the independent variables (or as a result of belonging to one of the categories when the independent variable is a categorical one), and 3) the amount of variation in income the independent variables explain.

Age, education, being Asian (as opposed being white) and having occupations other than clerical ones have positive effects on men's income, while residing in rural areas (as opposed to urban areas) and being Afro-Brazilian have negative effects on men's income. The effects of the independent variables on income vary from model to model, depending on the number and type of variables included in the model. The coefficients of the independent variables in Model 5 (Table 7.10) indicate the effect of each independent variable, while controlling for the others: A one-year increase in age results in an increase of Cz$638, a one-year increase in schooling amounts to an increase of Cz$4,429, and residing in rural areas (as opposed to urban areas) results in an decrease of Cz$2,572 in mean income. Other things being equal, being Afro-Brazilian (as opposed to being whites) results in a decrease of Cz$2,277 and being Asian (as opposed to being whites) results in an increase of Cz$6,459 in mean income. The mean incomes of managerial/administrative, professional/technical, transportation/communications, transformative and unskilled/personal service occupations are, respectively, Cz$31,532, Cz$20,521, Cz$1,364, Cz$1,140 and Cz$899 more than that of clerical occupations (the reference group).

The R^2 in the regression models tell us the amount of variation in men's income each independent variable explains; age explains 2.34%, education 9.31%, residence .02%, the color variables .21%, and the occupational variables 4.96% of the total variation in income. Thus, we can conclude that of the variables examined here, education is the most

important factor in determining men's income, occupation is the second and age is the third important factor. Residence and skin color have very little impact on income, when the other variables are controlled.

Women ages 18-65 in metropolitan São Paulo, Brazil have a mean monthly income of Cz$4,461, which is less than one fourth of the average income of men (Cz$19,047). Nonetheless, similar income differences by color, age, residence, education and occupation remain among women as well. The mean income of Asian women is more than 1.5 times that of white women and about 2.4 times that of Afro-Brazilians. The income difference by age group for women is very small, compared to men's data, mainly because of the extremely low average income of women; the mean incomes of the three age groups are, respectively, Cz$3,855, Cz$4,901 and Cz$4,456. On the other hand, the income difference between urban and rural women is quite big; the mean income of urban residents (Cz$4,797) is more than 4 times that of rural residents (Cz$1,082). This is probably the result of the vast majority of rural women having no income of their own.

The educational differences in income for women are very small at the levels of below 9 years of schooling, but they are extremely big at higher levels. The mean income of those with 9-11 years of schooling (Cz$8,657) is almost twice that of those with 5-8 years of schooling (Cz$4,576), and the mean income of those with 12 or more years of schooling (Cz$17,635) is more than two times that of those with 9-11 years of schooling. It is also important to point out that there is a huge gap between the mean income of men and women with the same education; at the levels of no schooling and 1-4 years of schooling, men's income is more than 5 times that of women's, and at the higher levels, men's income is more than 3 times that of women's.

The mean incomes of the six major occupational categories are clearly divided into three levels; the top level of income (Cz$29,670 for managerial/administrative occupations and Cz$19,405 for professional/technical occupations) is about 2 to 3 times the sample mean (Cz$10,488), the middle level of income (Cz$11,995 for clerical occupations and Cz$9,690 for transportation/communications occupations) is about the same as the sample mean, and the bottom level of income (Cz$6,936 for transformative occupations and Cz$5,717 for unskilled/personal service occupations) is far below the sample mean.

There is also a great deal of income disparity between men and women with the same occupation. In general, women's income is between 42-66% of men's income within the same occupational category, with the smallest disparity in clerical occupations (66.4%) and the biggest disparity in professional/technical occupations (42.2%). The bigger disparity in professional/technical occupations may be related to the fact that this category covers occupations with a wide range of income, and more men than women have higher-paying jobs. And the smaller disparity in clerical occupations are perhaps due to the smaller range of income associated with these occupations, and a higher percent of women (24.6%) than men (13.3%) who have these occupations.

When age group is controlled, the income difference between Asians and whites increases for the age groups of 18-25 and 26-39 but decreases considerably for the age group of 40-65, and the income difference between Asians and Afro-Brazilians widens for the middle age group but narrows for the other two age groups. In other words, the color differences in income are the biggest for people ages 26-39 and the smallest for people above 40. Although age accounts for some of the differences, especially for people above

40, it is not a major factor for the color differences in income. Controlling for residence, the color differences in income remain about the same in urban areas, but narrow generally in rural areas.

The income differences among the three color groups decrease significantly when educational level is controlled, particularly at higher levels of education. This indicates a strong positive effect of education on women's income. With the exception of the income difference between Asians and whites at the level of no schooling, the income differences among the three color groups at all levels of education are smaller than they are before the control of educational level. In particular, the mean incomes of the three groups at the level of 12 or years of schooling (Cz$17,788 for Asians, Cz$17,728 for whites and Cz$16,228 for Afro-Brazilians) are very similar, and the mean incomes of Asians and whites at the level of 9-11 years of schooling (Cz$8,283 for Asians and Cz$8,887 for whites) are very close as well.

When occupational category is controlled, the color differences in income become much smaller. However, Asian women continue to lead white women in most occupational categories and Afro-Brazilians continue to fall behind Asians and whites in all categories. The income differences between Asians and the other two groups are the biggest in unskilled/personal service occupations; the ratio between Asians and whites is 1.91 and the ratio between Asians and Afro-Brazilians is 2.38. The second biggest income differences between Asians and the other two groups are found in professional/technical occupations, where the ratio between Asians and whites is 1.35 and the ratio between Asians and Afro-Brazilians is 2.08. However, whites lead Asians in the categories of managerial/administrative and transportation/communications occupations, with a mean income of Cz$30,663, as opposed to a mean of Cz$29,645 for Asians, in the former, and

with a mean income of Cz$10,596, as opposed to a mean of Cz$9,000 for Asians, in the latter.

The regression models on women's data show that age, education, being Asian (as opposed to being white) and having occupations in managerial/administrative, professional/technical category (as opposed to clerical occupations) have positive effects on women's mean income, while residing in rural areas (as opposed to urban areas), being Afro-Brazilian and having transportation/communications, transformative and unskilled/personal services occupations (as opposed to clerical occupations) have negative effects on their mean income. Specifically, as the coefficients of the independent variables indicate in Model 5 of Table 7.20, a one-year increase in age results in an increase of Cz$264, a one-year increase in schooling results in an increase of Cz$1,730, residing in rural areas (as opposed to urban areas) results in a decrease of Cz$1,301. Other things being equal, being Afro-Brazilian (as opposed to being white) results in a decrease of Cz$899, and being Asian (as opposed to being white) results in an increase of Cz$2,214 in mean income. While controlling for the other variables, the mean incomes of managerial/administrative and professional occupations are Cz$15,201 and Cz$4,454 more than that of clerical occupations (the reference group), but the mean income of transportation/communications, transformative and unskilled/personal service occupations are, respectively, Cz$725, Cz$2,657 and Cz$3,069 less than that of clerical occupations.

The R^2 in the regression models show the amount of variation in income each independent variable explains. Age explains 1.61%, education 13.75%, residence .04%, the color variables .25% and the occupational variables explain 5.35% of the total variation in income. Therefore, we can conclude that of the independent variables examined here, education is the

most important factor in determining women's income, occupation is the second and age is the third important factor. The effects of residence and skin color are minimal after the control of the other variables.

CHAPTER 8
SUMMARY AND CONCLUSION

Japanese immigrants began to arrive in Brazil as the turn of the century and continued to come in sizable numbers through the 1960s, except for the ten-year pause from 1942-1952. The majority of the Japanese immigrants were farmers and started as *colonos* on coffee plantations in the state of São Paulo. By the late 1950s, they rose as a group from the lowest and least privileged status of *colonos* to middle class status through their hard work.

The experience of the Japanese Brazilians from the late 1950s to 1980 is proof of their continued success in upward social mobility. As I have shown throughout this study, Asian Brazilians (the majority of whom are of Japanese descent) fare better than do whites and Afro-Brazilians in all key social indicators examined here.

The fertility level of a population (or a subgroup) in modern societies is usually associated with its overall well-being. The data show that the fertility level (mean number of children) of Asian Brazilian women is 1.44, compared to 1.82 and 2.18 for white and Afro-Brazilian women. Controlling for age, Asians still have the lowest fertility level at all age levels. When income and age, residence and age, and residence and income are controlled, Asian Brazilians continue to have the lowest fertility level. However, when both educational level and age are controlled, Afro-Brazilians have the lowest fertility level at all levels except for the level of no schooling. On the one

hand, this is the result of the higher fertility level of Afro-Brazilian women with no schooling (over 20% of the total). On the other hand, this indicates the importance of education in reducing fertility for Afro-Brazilian women.

The multivariate regression models show that age and residence account for 36.7% and education and income account for 6.8% of the total variance in fertility, while the dummy variables for color account for only 0.97% of the total variance in fertility. All the independent variables together (age, residence, education, income and color) explain 43.6% of the total variation in fertility. Controlling for the other variables, the effects of the independent variables on the fertility level of Brazilian women are as follows: a one-year increase in age results in an increase of .1317 in mean number of children; residing in rural areas (as opposed to urban areas) results in an increase of .3793; a one-year increase in education results in a decrease of .2720; a one-unit increase (Cz$4,150) in mean monthly income results in a decrease of .0992; being Afro-Brazilian (as opposed to being white) results in an increase of .1827, while being Asian (as opposed being white) results in a decrease of .2476.

The regression models also show the differential effects of education and income on the three color groups. Education has greater negative effect on the fertility level of whites than that of Afro-Brazilians and Asians, and income has greater negative effect on the fertility level of Afro-Brazilians than that of whites and Asians. Specifically, a one-year increase in education reduces the mean number of children by .2795 for whites, compared with .2272 for Afro-Brazilians and .2080 for Asians, and a one-unit increase in mean monthly income reduces the mean number of children by .2771 for Afro-Brazilians, compared to .0851 for whites and .0809 for Asians.

The estimates based on the Brass Method show that the three color groups have different child mortality measures. The mortality estimates among Afro-Brazilian, white and Asian children are, respectively, 116, 82 and 51 per thousand by age two, 126, 87 and 54 per thousand by age three, and 134, 93 and 56 per thousand by age five. Based on the child mortality levels, Asians have an life expectancy of 72.12 years, compared to an life expectancy of 65.77 years for whites and 59.14 years for Afro-Brazilians. In other words, Asians are expected to live 6.35 more years than whites, who are, in turn, expected to live 6.63 more years than Afro-Brazilians.

The Tobit Regression analysis provides us with a deeper understanding of the relationship between child mortality and the social indicators, and between child mortality and skin color. The variables indicating socioeconomic status are all negatively correlated mortality ratio, with piped water having the greatest negative impact (-0.352) and household income having the least negative impact (-0.072). The differential effects of some of the variables are due to differences in scale of the variables; e.g., household income is an interval variable, while piped water is a nominal one. Of particular interest to us is the relationship of skin color to mortality. The Tobit regression results show that after controlling for the variables of social indicators, being Afro-Brazilian increases the probability of death by 24.2% while being Asian reduces the probability of death by 57.8%, compared to being white. These differences are significant, although there may be other structural and cultural factors at work.

In this study, I have measured educational attainment from three aspects; the school attendance rate for children ages 6-16, the mean years of schooling for men ages 18-65 and women age 18-65. There are huge differences in these three aspects among the three color groups.

The school attendance rate for children ages 6-16 differ greatly by color group: 88.7% of Asian children are in school, while 73.6% of white children and 64.7% of Afro-Brazilian children are in school. There are also marked differences in school attendance rate by age, income level, residence and parental education. Controlling for age, income, residence and parental education, Asian children still do much better than the other two groups, suggesting indirectly that Asians put more emphasis on education than do the other two groups.

The results of logistic regression analyses show quantitatively the effects of the independent variables on the in-school rate of children ages 6-16. In general, father's and mother's education and household income have about the same positive effects across ages on whether or not a child is in school. For example, a one-unit increase in these variables increase the odds of being in school by 10-15% in most cases. Urban residency has an increasingly more positive effect on in-school rate, except at age 6. In fact, the odds of being in school for urban children (compared to rural children) increase by more than 100% between ages 11 and 16. The logistic regression analyses also indicate that being Afro-Brazilian, compared to being white, reduces the odds of being in school by 14-32%, except at age 12, while being Asian, compared to being white, increases the odds of being in school by 140-470% for most ages. However, the significance level (p-value) for the coefficients of the dummy variables for Afro-Brazilian at age 12 and for Asians at ages 6, 8, 10 and 11 are above .05, indicating that they are not significantly different from whites at these ages in school attendance rate.

The educational attainment of men ages 18-65 vary a great deal by color group, as well as by age group, residence and income level: Asian men, on average, have 7.44 years of schooling, compared to 5.3 years for whites and 3.5

years for Afro-Brazilians. The educational differences among the three color groups do not reduce in most cases, after controlling for age or residence. This indicates that the color differences in education are related to factors other than the differences in age and residence of these groups. However, when income is controlled, the color differences in education become bigger at the levels of below two minimum wages and smaller at the levels of above two minimum wages. This suggests that income above two minimum wages has positive effect on education while lower income does not. The bigger differences among the color groups at lower levels of income are more than likely related to factors other than income.

The educational attainment of women ages 18-65 vary by color, as well as by age group, residence and income: The mean years of schooling of Asian women is 6.65, compared to a mean of 4.90 years for whites and a mean of 3.23 years for Afro-Brazilians. Although the educational level of women as a whole is lower than that of men and the same holds true within the respective color groups, women outperform men in a few categories. For instance, women age 18-25, on average, have 6.05 years of schooling, compared to a mean of 5.95 years for men of the same age group. Also, the mean years of schooling of women with a mean monthly income of at least one minimum wage exceed those of men. Unfortunately, over two thirds of women have mean incomes of less than one minimum wage.

When age group or residence is controlled, the color differences in education remain about the same, i.e., the educational level of Asian women is higher than that of white women, who in turn have a higher educational level than Afro-Brazilian women. This suggests that the differences in age and residence are not causal factors for the color differences in education. However, when income is controlled, the educational differences among the

three groups reduce considerably in most cases. In particular, at the highest income level of above three minimum wages, Asian and white women have very similar levels of schooling (9.46 years for Asians and 9.08 years for whites), and the ratio between Asian and Afro-Brazilian women reduce to 1.31 from 2.06 before the control of income. This indicates a stronger correlation between education and income for women than for men in Brazil.

The occupational profile of men ages 18-65 varies a great deal by color, as well as by age group, residence, income and educational levels. Fifty-two percent of Asian men have white collar occupations, compared with 36.9% of whites and 16.3% of Afro-Brazilians. More importantly, nearly 39% Asian men have either managerial/administrative or professional/technical occupations, as opposed to about 22% of whites and about 7% of Afro-Brazilians. The distribution of white vs. blue collar occupations is very similar for the three age groups. As expected, the percentage of white collar occupations is much higher for urban residents (35.8%) than for their rural counterparts (10.3%), and it increases from lower to higher income and educational levels. For instance, the percentages of white collar occupations for men from the lowest to the highest income levels are, respectively, 9.7%, 16.3%, 20.9% and 50.1%, and those for men from the lowest to highest educational levels are 6.2%, 16.4%, 40%, 72% and 93.7%, respectively.

The occupational differences among the three color groups remain much the same, controlling for age group or residence, i.e., Asian men are over represented in white collar occupations than are whites, who, in turn, do better than Afro-Brazilians. As expected, the occupational differences among the three color groups decrease considerably when income is controlled. However, the rates of decrease vary with color groups and income

levels. For instance, after the control of income, the difference between Asians and whites in the proportion of blue collar occupations are smaller at the two ends of income level than it is at the middle two income levels. Meanwhile, the difference between Asians and Afro-Brazilians in the proportion of blue collar occupations is the smallest at the lowest income level, gets increasingly bigger at the two middle levels, and finally becomes the same as before it is the control of income.

When education is controlled, the occupational differences among the three color groups reduce considerably, particularly at higher levels of education. This is particularly obvious in the distribution of white collar occupations for Asians and whites. At the levels of 5-8 and 9-11 years of schooling, Asians and whites have similar percentages of managerial/administrative and professional/technical occupations. Meanwhile, the gap between Asians and Afro-Brazilians in most occupational categories reduces considerably; 36.2% of Asians vs. 39.4% of Afro-Brazilians have blue collar occupations at the level of 9-11 years of schooling and 9.5% of both groups have blue collar occupations at the level of 12 or more years of schooling.

The occupational distribution of women as a whole differs from that of men in several respects. First, only about 35% of women in the sample have occupations listed in the census. Second, proportionally more women than men have clerical and professional/technical occupations, and consequently fewer women have blue collar occupations. Third, the percentage of unskilled/personal service occupations is much higher for women than it is for men because the other two categories of blue collar occupations are far less popular among women.

Despite the above differences, women share the basic patterns in the occupational distribution of men, i.e., there are differences by color, age group, residence, income and educational levels. Asian women, as their men counterparts, have the highest percentage of white collar occupations, 65.9%, compared to 50.8% of white women and 19.9% of Afro-Brazilian women. Unlike men's data, there are considerable differences among women of the three age groups in the percentage of blue collar occupations; 50.1% of women ages 18-25, 55.9% of women ages 26-39 and 68.9% of women ages 40-65 have blue collar occupations. As expected, the percentage of blue collar occupations is much lower for urban women (54.9%) than for rural women (87.7%), and it decreases sharply with the increase of income and educational levels. For instance, the percentages of blue collar occupations for women from the lowest to the highest income levels are, respectively, 88%, 68.9%, 37.8% and 14.4% and those for women from the lowest to the highest educational levels are 98%, 85.3%, 50%, 10.6% and 1.9%, respectively.

When age group or residence is controlled, the color differences in occupational distribution have very little changes. This indicates that the color differences in occupational distribution are not due to the variations in the age structures or residential locations of these groups. However, the occupational differences among the three color groups reduce considerably, when income is controlled, especially at higher levels of income. Although Asians have the highest percentage of white collar occupations at the first three income levels, whites surpass them at the highest income level (above three minimum wages). The gaps among the three color groups are much smaller at the highest income level as well. For example, the percentages of managerial/administrative occupations for Asians and whites are the same

(13.4%), and the percentages of clerical occupations for all three groups are very close (34.9% for Asians, 33.6% for whites and 31.8% for Afro-Brazilians).

The occupational differences among the three color groups reduce considerably, when educational level is controlled, especially at higher levels of education. At the levels of less than 4 years of schooling, Asian women have the highest percentage of white collar occupations, but whites have the highest percentage of white collar occupations above 4 years of schooling. Nonetheless, Asians lead the other two group in the proportion of managerial/administrative occupations at all levels, except at the level of 12 or more year of schooling, where whites have the highest percentage. Interestingly, at the levels of 1-4, 5-8 and 9-11 years of schooling, Afro-Brazilians have a higher percentage of professional/technical occupations than do Asians. While whites lead the other two groups in every category of white collar occupation at the highest educational level, Asian and Afro-Brazilians have a very similar distribution of white collar occupations; 7.3% of both group have managerial/administrative occupations, 49.3% of Asians vs. 47.2% of Afro-Brazilians have professional/technical occupations, and 39.8% of Asians vs. 42.7% of Afro-Brazilians have clerical occupations.

The mean monthly income of men ages 18-65 in metropolitan São Paulo, Brazil varies by color, age, residence, education and occupation. The mean monthly income of Asians (Cz$35,492) is 1.5 times that of whites (Cz$21,111) and more than 3 times that of Afro-Brazilians (Cz$10,775). As expected, older people have higher mean incomes than younger people, urban residents have higher mean incomes than rural residents, people with more years of schooling have higher mean incomes than people with fewer years of schooling, and people with white collar occupations have higher mean incomes than people with blue collar occupations.

When age group is controlled, the income differences among the three color groups reduce substantially for the age group of 18-25, but increase for the other age groups. This is mainly because most people ages 18-25 have low-paying entry level jobs and the range of income difference for these jobs is usually small. The income differences among the three color groups are the biggest for the age group of 26-39; the mean monthly incomes of Asians, whites and Afro-Brazilians are, respectively, Cz$42,238, Cz$23,826 and Cz$12,543. Nevertheless, Asians have the highest mean income in each age group. The income differences among the color groups reduce slightly in urban areas, but increase substantially in rural areas, when residence is controlled. Asians still maintain a significant lead in both urban and rural areas.

Interestingly, when education is controlled, the income differences between Asians and the other two groups are wider at lower levels of education (below 8 years of schooling), but decrease considerably at higher levels. For example, Asian and whites have comparable incomes at the level of 9-11 years of schooling (Cz$27,649 for Asians and Cz$26,984 for whites), and whites have a higher mean income than do Asians at 12 or more years of schooling (Cz$59,972 for whites and Cz$53,573 for Asians). Although the income gap between Asians and Afro-Brazilians are also smaller at levels of more than 9 years of schooling than it is before the control of education, the mean income of Afro-Brazilians is still around 60% of those of whites and Asians.

When occupation is controlled, the income differences Asians and the other two groups reduce considerably, except in unskilled/personal service occupations, where the mean income of Asians is substantially higher than that of the other two. In general, the income difference between Asians and

whites is smaller in white collar occupations and the income difference between Asians and Afro-Brazilians is smaller in blue collar occupations. Still, Asians maintain the highest mean income in every occupational category.

The results of the regression analyses show that of the independent variables examined here, education explains the most, 9.31%, of the total variation in men's income, followed by occupation (4.96%) age (2.34%), color (.21%) and residence (.02%). Specifically, controlling for the other variables, a one-year increase in age results in an increases of Cz$638, a one-year increase in schooling amounts to an increase of Cz$4,429, and residing in rural areas (as opposed to urban areas) results in a decrease of Cz$2,572 in mean income. Other things being equal, being Afro-Brazilian (as opposed to being white) reduces one's mean income by Cz$2,277, and being Asian (as opposed to being white) increases one's mean income by Cz$6,459. In other words, even after controlling for the other independent variables, the three color groups still have significantly different mean incomes. There may be some other factors contributing to the color differences in income, such as total hours worked.

The mean monthly income of women ages 18-65 in metropolitan São Paulo, Brazil is Cz$4,461, which is less than one fourth of the average monthly income of men (Cz$19,047). Nonetheless, there are similar income differences by color, age, residence, education and occupation among women as well. Asian women have the highest mean income (Cz$7,261), which is more than 1.5 times that of white women and about 2.4 times that of Afro-Brazilian women. The income differences of women by age group are very small, mainly due to their extremely low average income, but the income difference between urban and rural women is quite big (Cz$4,797 for urban

women vs. Cz$1,082 for rural women) probably because the majority of rural women have no income of their own.

The income differences of women by education are very small at the levels of below 9 years of schooling, but they are extremely great at higher levels. The mean income of women with 9-11 years of schooling (Cz$8,657) is almost twice that of those with 5-8 years of schooling, and the mean income of women with 12 or more years of schooling (Cz$17,635) is more than 2 times that of those with 9-11 years of schooling. The income differences of women by occupation are quite obvious and show three distinct levels; the top level (managerial/administrative and professional/technical occupation) with a mean income of 2-3 times that of the sample mean, the middle level (clerical and transportation/communications occupations) with a mean income about the sample mean, and the bottom level (transformative and unskilled/personal service occupations) with a mean income far below the sample mean.

When age or residence is controlled, the income differences among the three color groups either increase or decrease a little, but not much, indicating the minimal role of age and residence in the income variations of the color groups. On the other hand, when education is controlled, the income differences among the color groups reduce significantly, especially at higher levels of education. For example, the mean incomes of Asians and whites at 9-11 years of schooling are very close (Cz$8,283 for Asians and Cz$8,887 for whites), and the three color groups have similar mean incomes at the level of 12 or more years of schooling; Cz$17,788 for Asians, Cz$17,728 for whites and Cz$16,228 for Afro-Brazilians. The income differences among the three color groups are very small, when occupation is controlled. However, the mean income of Asian women is higher than that of white women in most

categories, and the mean income of Afro-Brazilians continue to fall behind those of Asians and whites in all categories.

The results of the regression analyses on women's income show that of the independent variables examined here, education explains the most, 13.75%, of the variation in their income, followed by occupation (5.35%), age (1.61%), color (.25%) and residence (.04%). Specifically, controlling for the other variables, a one-year increase in age results in an increase of Cz$264, a one-year increase in schooling amounts to an increase of Cz$1,730, and residing in rural areas (as opposed to urban areas) results in a decrease of Cz$1,301 in mean monthly income. Other things being equal, being Afro-Brazilian (as opposed to being white) reduces one's mean income by Cz$899, and being Asian (as opposed to being white) increases one's mean income by Cz$2,214. This indicates that there are still significant income differences by color, even after controlling for the other variables. However, it is possible that some other variables that are not examined in this study are partly or mainly responsible for the color differences in income. Thus, we need to explore the issue in a broader context to find out the real causes of the color differences.

The findings of this study show that Asian immigrants in Brazil have experienced similar, if not more, success in upward social mobility as Asian immigrants in the United States have. Then, we need to ask why Asian immigrants in both the United States and Brazil have been so successful, relative to other minority groups and even the majority whites. The literature on the Asian experience in both countries suggests that they share some common characteristics, which have contributed to their success.

First, Asian Brazilians and the more successful Asian groups, such Japanese and Chinese, in the U.S., have had or still have their ethnic

enclaves. As discussed in Chapter 1, ethnic enclaves generally promote the development of ethnic economies thereby benefiting all people within the enclaves, although ethnic employers get a much bigger share of the profit. Therefore, ethnic minorities usually benefit from the presence of ethnic enclaves and ethnic economies in the long run because ethnic economies counter "the hostility of the host society by creating economic opportunities in family and other kin-based economic enterprises" (Hirschman and Wong, 1986:174).

Second, the ownership of small business is very important to the success of many Asians in both Brazil and the U.S. In family-owned small businesses, family members usually work as a unit, pool their resources together so that they can minimize the cost and achieve higher returns on their investment. Nee and Sanders (1985) noted that small business ownership provided Asian Americans with ethnically controlled avenue of economic mobility.

Third, the success of Asian Americans can be attributed to certain family characteristics associated with them, namely a high proportion of families with both husband and wife, a high proportion of families with three or more workers, and a low rate of family dissolution. According to the 1990 U.S. census, 82% of Asian families have both husband and wife, compared to the national average of 79%, and 20% of Asian families have three or more worker per family, compared to the national average of 13% (U.S. Bureau of the Census, 1993). Similarly, more successful Asian groups have lower family dissolution rates. For example, Japanese and Chinese American women had lower family dissolution rates than did white women in 1979: For women ages 25-64, 11.5% of native-born Chinese women and 8.5% of native-born Japanese women were either divorced or separated, compared to 12.5% of

native-born white women; 4.2% of foreign-born Chinese women and 9.5% of foreign-born Japanese women were either divorced or separated, compared to 9.6% of foreign-born white women (U.S. Commission of Civil Rights, 1988). Similar family characteristics are also found among Asian Brazilians.

Fourth, both in Brazil and the U.S., Asian immigrants have invested heavily on human capital, mainly in the form of education, and have achieved tremendous success in educational attainment. Some attribute their extraordinary educational achievement solely to their cultural values that revere scholarship and learning, while others argue that Asians have invested heavily in education because they have realized that education is the main channel for social mobility for them, after experiencing considerable occupational discrimination. As a result of their higher educational attainment, they are over represented in white collar occupations, such as managerial, professional, technical, sales and service, and hence have higher average income. At the same time, we must note that most Asian Americans have lower returns on their educational investment than do similarly educated whites.

Finally, certain cultural values, such as hard work, industriousness, emphasis on education, the obligation and loyalty to family and kin group, sacrifice for children and delayed gratification, of Asian groups have also contributed indirectly to their success. Without the persistent reinforcement of these cultural values from generation to generation, Asian immigrants and their descendants could not have achieved what they have achieved today.

In sum, the success of Asian immigrants in both Brazil and the United States are related to factors at the community, household and individual levels. At the community level, ethnic enclaves have provided a favorable

atmosphere not only for ethnic employers and entrepreneurs to develop ethnic economies and to make profits, but also for ethnic workers, especially new comers, to obtain employment, overcome their language barriers and cultural shock, and to gradually secure means of social mobility. At the household level, the ownership of small business and family members working together in these small businesses are crucial elements to the success of Asian groups. Also important are a higher proportion of families with married couples and having more family members in the labor force. It is very difficult to have a high proportion of families with married couples and have more persons working within a family without the loyalty and obligation to family and sacrifice for children. At the individual level, higher educational attainment, professional and technological skills associated with many foreign-born Asian immigrants in recent years, and adherence to the cultural values of hard work, industriousness and delayed gratification are vital to the upward social mobility of Asian groups.

While we focus on the success of Asian immigrants in both Brazil and the U.S., we must be aware that the stereotype of Asian Americans as "model minority" is partly based on misleading statistics and does not fit many groups within the Asian American population. Furthermore, it has negative consequences with regard to race relations (Commission on Civil Rights, 1992): 1) It may lead people to ignore the real social and economic problems of many Asian groups who are less successful; 2) it diverts public attention from the existence of discrimination against more successful Asian Americans (e.g., "glass ceiling" in employment and discriminatory admissions policies in colleges and universities); 3) it puts undue pressure on young Asian Americans to succeed in school and in their careers; 4) it may be used to discredit other minorities for failing to succeed.

Based on the historical experience of Asian Brazilians and the assessment of their socioeconomic status in 1980, relative to whites and Afro-Brazilians, I expect Asian Brazilians to have achieved further improvements in socioeconomic standing in 1990s. The up-coming 1990 Brazilian census will allow us to test this hypothesis, and examine the changes, if any, in the relationships among the various color groups in Brazil. Meanwhile, there is also a great need for more cross-cultural studies, both quantitative and qualitative, on the present conditions of certain Asian immigrant populations (e.g., Japanese and Chinese) throughout the world to see if they have achieved similar successes as their counterparts in Brazil and the United States have. If so, we then need to examine the factors that are associated with their success, and compare them to what we already know from the literature so that we will have a better understanding of why certain ethnic/racial minorities can achieve greater level of success in modern societies.

APPENDIX A
BRAZILIAN RACIAL CATEGORIES AND THE CENSUSES

Researchers on Brazilian race relations have noted that Brazilians use hundreds of racial terms to identify themselves (Degler 1971; Harris 1964a; Harris 1970; Harris et al. 1993; Harris and Kottak 1963; Sanjak 1971). For example, Harris (1964a) elicited forty different racial types, using a set of portraits with different skin tones, hair textures, and nasal and lip widths. The respondents in the 1976 National Household Survey (Pesquisa Nacional de Amostragem por Domicilios, PNAD) provided nearly 200 racial terms in the open-ended question on race (Andrews 1991). Recently, Kottak (1992) reported that his respondents in a national survey of racial classification used a total of 36 terms to describe racial categories.

By contrast, the Brazilian censuses of 1940, 1950 and 1980 offered respondents just four categories---white (*branco*), mulatto (*pardo*), black (*preo*) and yellow (*amarelo*)---to identify themselves racially. Obviously, the census has greatly simplified the complex system of racial classification used by Brazilian people, and there has been a debate on whether the census categories accurately reflect people's self-perception of their race, or more accurately, the major distinctions among the many racial terms. The crucial question is the extent to which the census scheme departs from people's self-classification if they are allowed other options.

Of course, it is impossible to include hundreds of racial terms in a census, but the main focus of the recent debate is on whether *pardo*, a term used in the censuses, is more appropriate or salient than *moreno*, which has

not been used in the censuses, for people who are neither white (*branco*) nor black (*preto*). Harris et al. (1993) and (Kottak, 1992) argue that *moreno* is more salient than *pardo*, and that the use of *pardo* in the censuses has distorted the data on the racial composition of Brazilians. Using *pardo*, they say, produces overestimates of the number of whites and blacks and underestimates of the number of people who belong to the intermediate categories between white and black.

The 1976 National Household Survey (Pesquisa Nacional de Amostragem por Domicilios, PNAD) addressed this issue. The survey included two items on race; the first was an open-ended item which permitted respondents to use whatever term they wished and the second was the standard fourfold classification. Soares and Silva (1987) reported the result of the cross-classification of the racial terms by free and forced choice in the survey: 96.7% of those who identified as *branco* in the free choice chose *branco* under the forced option; 94.0% of those who identified themselves as *pardo* in the free choice chose *pardo* under the forced option; 89.3% of those who identified themselves as *preto* chose *preto* under the forced option. In addition, almost 40% of the respondents used three other racial labels for self-identification, *claro* (light-skinned), *moreno claro* (tan), and *moreno* (brown). Of the three labels, *moreno* (brown) accounted for 86.7 percent, and 66.1% of those who identified themselves as *moreno* chose *pardo* under the forced choice. Soares and Silva summarized the findings as follows:

> But just 7 (terms) out of the 190 accounted for 95 percent of all answers. These seven included the four standard labels in the precoded question plus *claro* (light-skinned), *moreno* (brown), and *moreno claro* (light brown or tan). Moreover, two of the designation, *branco* and *moreno*, accounted for 76 percent of all answers. (1987:167)

Based on these observations, Soares and Silva argued that most of the racial labels used by Brazilians "do not amount to a social phenomenon with possible political significance" (1987:168) because they are either statistically insignificant or derivations of individual idiosyncrasies.

Wood and Lovell (1992:708) also commented on the results of the 1976 National Household Survey:

> Analyses of the open-ended item showed that, despite the wide range of terms, the four categories (white, black, mulatto and yellow) accounted for about 57.1 percent of the responses. Three additional classifications (which range from light to dark brown) proved to be important: *clara* (2.5 percent); *morena clara* (2.8 percent); and *morena* (34.4 percent). Further analyses found that nearly all of the people who declared themselves *morena* in the open-ended question properly classified themselves as *pardos* when confronted with the pre-coded options. The four-category scheme thus accounted for approximately 95 percent of all responses (Oliveira, Porcaro and Costa 1981). Analysts in the Census Bureau concluded that the forced-choice method, although not perfect, was sufficiently reliable to be used in the 1980 enumeration.

Recently, Harris et al. (1993) tested the census assumption that *pardo* and *moreno* are more or less equivalent. Using a sample of 253 people from the town of Rio de Contas, they asked respondents to identify themselves racially first by free choice and then by two sets of forced racial categories. One of the sets was the "*pardo* option" (the four-category scheme of the Brazilian census) and the other was the "*moreno* option" (also a four-category scheme where *pardo* is replaced by *moreno*). Harris et al. found that when people were given the forced choices, they were twice as likely to classify themselves as *moreno* than as *pardo*. Furthermore, only 37.4% of those who identified themselves as *moreno* in the *moreno* option shifted to *pardo*, when they were given the *pardo* option, and 31.3% shifted to *branca* and 27.8% shifted to

preto. Using the asymptotic approximation technique known as the delta method (Agresti 1990), they concluded that they can be 95% confident that with the moreno option, randomly selected respondents are between 25.64% and 59.56% less likely to self identify as *branco* as opposed to with the *pardo* option. They also concluded that they can be 95% confident that respondents chosen at random, when given the *moreno* option, are between 34.08% and 68.92% less likely to identify as *preto* then are those presented with the *pardo* option (Harris et al. 1993). In other words, the number of whites and blacks falls dramatically (40-50% on average), if the *moreno* option is used instead of the *pardo* option.

If the above conclusions were correct at the national level, there would be dramatic changes in the racial composition of Brazil. In fact, Harris et al. say that "there is no reason to believe that similar confusion does not reign for the nation as a whole" (1993:459). Unfortunately, there has been no such study at the national level that directly addresses the problem of *pardo* vs. *moreno* in the census and its impact on not only the racial composition of Brazil as a whole, but also race relations and studies on racial inequalities. Therefore, the conclusions of the study by Harris et al. (1993), though important, remains to be tested at the national level before it can be accepted.

Another way of approaching this problem is to examine the stability of self-identification over time. Although direct estimates of the magnitude of color reclassification do not exist, one study devised an indirect technique to address this topic. Following the same logic that demographers use to study net migration, Wood (1990) took the number of men and women aged 10 to 29 years in 1950 (in standard five-years categories) and applied survival rates derived from a series of race-specific life tables to project the size of each cohort 30 years ahead. The projections, by sex and age, produced estimates of

the number of people expected in each color category in 1980 *if no reclassification occurred* during the period. The difference between the size of the projected population and the actual number enumerated in the 1980 census thus provided a crude estimate of the degree to which people "migrated" from one color classification to another.

The findings showed that around 38% of the men and women who declared themselves black in 1950 changed their identity to mulatto in 1980. Among mulattoes, the actual population exceeded the projected number by around 36 percent as a consequence of the "migration" of blacks into the mulatto category. For whites, on the other hand, the actual size of population was very similar to the projected size, suggesting little movement in or out of that color classification (Wood 1990). These findings suggest that the "black" self-designation has been unstable over time, and especially subject to the circularity between color self-identification and socioeconomic standing. On the other hand, the "mulatto" designation was far more stable and less subject to the circularity bias. Based on these observations, Wood (1990) suggested that there were compelling reasons to collapse black and mulatto into a single nonwhite category when we use Brazilian census data to study racial inequality.

A number of studies on racial inequalities in Brazil (Hasenbalg 1985; Hasenbalg and Huntington 1982; Lovell 1989; Silva 1978 and 1985; Wood 1990; Wood and Carvalho 1988; Wood and Lovell 1989 and 1992) adopted the dichotomous system of racial classification, whites vs. nonwhites, in analyzing the Brazilian race relations. Wood and Carvalho explained both the practical and substantive reasons for collapsing the "black" and "brown" into a single "nonwhite" category:

> In practical terms, the number of blacks is very small, a factor that limits our ability to crossclassify the data in meaningful ways. Moreover, the substantive findings of research by Silva (1985) and Hasenbalg (1985) show little differences between the two, thus allowing us to treat them as a single group. (1988:270)

Silva (1978) analyzed the income differentials between whites and nonwhites, using the 1960 Brazilian Census and Silva (1985) did a follow-up study on the same topic, using the 1976 National Household Survey. Both studies concluded that blacks and mulattos seemed to display strikingly similar profiles and there were substantial differences in economic attainment between whites and nonwhites. Hasenbalg (1985) also used the 1976 National Household Survey to examine the structural relations and unequal exchange between whites and nonwhites. On the relationship among the racial groups, Hasenbalg maintained that "the mulatto group occupies an intermediate position between blacks and whites in all the dimensions considered, although its position is always closer to the black than to the white group" (1985:28). After examining the geographic distribution, literacy rate, educational level, distribution in the economic sector, mean monthly income, intergenerational occupational mobility, occupational distribution by educational level and income returns on education by race, Hasenbalg concluded that

> nonwhites are exposed to a cycle of cumulative disadvantage in terms of intergenerational social mobility and the process of status attainment. To be born nonwhite in Brazil usually means to be born into low-status families. The chances of escaping from the disabilities inherent in a low social position are considerably smaller for nonwhites than for whites of the same background. As compare to whites, nonwhites suffer a competitive disadvantage in all phases of the process of intergenerational transmission of social inequalities. (1985:40)

The findings of Lovell's research (1989) on racial inequalities and the Brazilian labor market were consistent with the findings by Silva (1978 and 1985) and Hasenbalg (1985); i.e., although there were differences between blacks and mulattos in the labor market, the major dividing line fell between whites and nonwhites.

Based on the empirical findings in the above studies and the main focus of my dissertation, which is Asian Brazilians, I adopt the three-way classification scheme. In other words, the categories of white and yellow remain the same, except that I use the label of Asian Brazilian for yellow, and brown (pardo) and black (preto) Brazilians are combined into a single category of Afro-Brazilians. I could have compared Asian Brazilians to the rest of the population as a whole or to all of the racial categories used in the census. In my view, though, the position of Asians in Brazilian demography is most clearly shown by comparing them to whites and nonwhites in general.

APPENDIX B
INDIRECT MEASURES OF CHILD MORTALITY

The following are from Wood and Lovell (1992:710-711).

The Brass Method

The equations for the Brass method are of the form:

$$q(a) = d(j) \cdot G(j)$$

where

q(a) = the probability that a child will die before age a,

d(j) = the proportion dead among children ever born to women in age category j

(where j signifies age groups 15-19, 20-24, 25-29, 30-34), and

G(j) = multiplier corresponding to women in age category j.

The multiplier G(j) adjusts for the age pattern of fertility. This is necessary because the age pattern of childbearing determines the distribution of the children of a group of women by length of exposure to the risk of dying. The younger the onset of childbearing, the older the average age of children born to women in age j. In the Brass method, the multiplier is selected according to the values of P(1)/P(2), where P(1) is the average parity (average number of children ever born) reported by women in ages 15-19 and P(2) is the average parity reported by women in ages 20-24. Estimates of q(1) are generally inaccurate and are therefore discarded. The estimates used here are for q(2), q(3) and q(5) that correspond to the child mortality experience of

women aged 20-24, 25-29 and 30-34, respectively. Subsequent extensions of the method, such as the one proposed by Trussell (1975) rely on the same relationships that Brass identified and used to such good effect.

The Trussel and Preston Technique

Trussell and Preston (1982) further suggested a method for analyzing mortality differentials that, instead of translating survival ratios into rates for groups of women, adjusts the ratio of dead children to the number ever born for *each woman*. The goal of the Trussell-Preston procedure was to construct an index of child mortality which could be treated as the dependent variable using multivariate statistical techniques. We refer to the index as the child mortality ratio because it is the ratio of observed to expected deaths. The index of child mortality for woman i in age category j, Mij, is thus:

$$M_{ij} = \frac{D_i}{N_i \cdot EPDj}$$

where

D_i = number of dead children for woman i

N_i = number of births to woman i

EPDj= expected proportion of dead children for a woman in age category j (in this case, 20-24 and 25-29).

To derive EPDj, Brass's mortality estimation procedure, q(a)=d(j)G(j), is inverted, yielding: EPDj=q(a)/G(j). To apply the Brass equation to the problem at hand, Trussell and Preston imposed a "standard" mortality function q_S (a) (in this study, from the "South" model in the Coale-Demeny family of life

tables) and converted the standard into the expected proportion dead by rewriting the previous equation as EPDj= q_S (a)/G(j).

In the Trussell/Preston method, the multipliers, G(j) are estimated from a regression involving average parities (Pj) for all women in age groups 15-19 (P1), 20-24 (P2), 25-29 (P3). The constant term, a(j), and the regression coefficients, b(j) and c(j), are taken from the National Academy of Sciences Manual on Demographic Techniques (NAS 1981) (again from the "South" model values).

The probability that a child will die is partly a function of how long he or she has been exposed to the risk of death. But it is unappealing to insert an additive term into a regression analysis. Such a procedure implies that the duration effect acts independently of the effects of the covariates on the cumulative chances of death. A more reasonable assumption is that the effects of being located in an unfavorable environment tend to accumulate the longer the child is exposed, suggesting an interaction between duration of exposure and other covariates. The method Trussell and Preston (1982) developed offers a procedure for estimating the covariates of child morality by accounting for these interactions in the estimation of the child mortality ratio, a dependent variable amenable to regression analysis.

The Pj/Pj+1 ratios account for differences in the duration of exposure to death by adjusting the equation by the timing of childbearing, as follows:

$$G(j) = a(j) + b(j)\,(P(1)/P(2) + c(j)\,(P(1)/P(2)$$

The final form of the child mortality index for woman i in age category j is thus:

$$M_{ij} = \frac{D_i}{N_i \cdot q_s(a)/G(j)}$$

Because there are no negative values for the ratio, the mortality index is truncated on the left at zero. Moreover, the value of M will be zero for the majority of women because relatively few of them experience the death of one or more children. Among those women who do experience child mortality, there will be wide variability in the size of M. Under these circumstances, ordinary least squares is inappropriate for estimating the covariates of child mortality (see Dhrymes 1986; Maddala 1985). Tobin (1958) first considered the problem, and proposed an iterative solution of the maximum likelihood equations. The alternative method, which is a hybrid of probit and ordinary least squares analysis, has come to be called the Tobit model (from Tobin's probit). Because Tobit estimates are standardized by the probability of observing a zero in the dependent variable, it is particularly applicable to the mortality ratio due to the high proportion of women in our sample who experienced no child mortality.

APPENDIX C
LOGISTIC REGRESSION WITH SCHOOL ATTENDANCE OF CHILDREN AGES 6-16 AS THE DEPENDENT VARIABLE, METROPOLITAN SÃO PAULO, BRAZIL, 1980

Age 6

	Chi-Square	DF	Significance
-2 log likelihood	10400.236	13821	.0000
Model chi-square	291.263	6	.0000
Improvement	291.263	6	.0000
Goodness of fit	13832.428	13821	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.0553	.0111	24.9310	1	.0000	.0463	1.0568
Mothers' Ed	.0247	.0116	4.5613	1	.0327	.0155	1.0250
Income	.0287	.0056	26.1463	1	.0000	.0475	1.0291
Urban	-.2393	.0761	9.8999	1	.0017	-.0272	.7872
Afro-Brazilian	-.2192	.0682	10.3249	1	.0013	-.0279	.8032
Asian	.2681	.1699	2.4897	1	.1146	.0068	1.3075
Constant	-2.1833	.0727	902.5747	1	.0000		

Age 7

	Chi-Square	DF	Significance
-2 log likelihood	14867.199	13924	.0000
Model chi-square	1967.561	6	.0000
Improvement	1967.561	6	.0000
Goodness of fit	14168.750	13924	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1118	.1288	114.0737	1	.0000	.0816	1.1183
Mothers' Ed	.1288	.0110	136.5178	1	.0000	.0894	1.1374
Income	.0934	.0086	117.5861	1	.0000	0829	1.0979
Urban	.3286	.0519	40.0840	1	.0000	.0476	1.3890
Afro-Brazilian	-.3492	.0438	63.6909	1	.0000	-.0605	.7052
Asian	1.3957	.3373	17.1202	1	.0000	.0300	4.0379
Constant	-.4369	.0530	67.9134	1	.0000		

Age 8

	Chi-Square	DF	Significance
-2 log likelihood	8702.992	13529	.0000
Model chi-square	1360.146	6	.0000
Improvement	1360.146	6	.0000
Goodness of fit	20201.435	13529	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1427	.0160	79.6550	1	.0000	.0878	1.1533
Mothers' Ed	.1849	.0169	120.2116	1	.0000	.1084	1.2031
Income	.1175	.0148	63.1307	1	.0000	.0779	1.1247
Urban	.5558	.0643	74.6221	1	.0000	.0850	1.7432
Afro-Brazilian	-.3914	.0585	44.7251	1	.0000	-.0652	.6761
Asian	.2102	.3779	.3093	1	.5781	.0000	1.2339
Constant	.3316	.0684	23.5277	1	.0000		

Age 9

	Chi-Square	DF	Significance
-2 log likelihood	6909.496	13362	.0000
Model chi-square	806.721	6	.0000
Improvement	806.721	6	.0000
Goodness of fit	19373.151	13362	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1034	.0185	31.2931	1	.0000	.0616	1.1089
Mothers' Ed	.1724	.0201	73.3429	1	.0000	.0962	1.1881
Income	.1108	.0172	41.6041	1	.0000	.0716	1.1171
Urban	.5777	.0737	61.4235	1	.0000	.0878	1.7819
Afro-Brazilian	-.3022	.0682	19.6400	1	.0000	-.0478	.7392
Asian	1.6686	.7908	4.4520	1	.0349	.0178	5.3046
Constant	.8853	.0769	132.6641	1	.0000		

Age 10

	Chi-Square	DF	Significance
-2 log likelihood	6733.702	13312	.0000
Model chi-square	762.755	6	.0000
Improvement	762.755	6	.0000
Goodness of fit	18104.201	13312	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1357	.0194	48.7864	1	.0000	.0790	1.1453
Mothers' Ed	.1641	.0207	62.8661	1	.0000	.0901	1.1783
Income	.0782	.0161	23.5439	1	.0000	.0536	1.0813
Urban	.6887	.0736	87.5281	1	.0000	.1068	1.9912
Afro-Brazilian	-.2531	.0701	13.0344	1	.0003	-.0384	.7764
Asian	.7809	.5246	2.2158	1	.1366	.0054	2.1835
Constant	.9265	.0757	149.6128	1	.0000		

Age 11

	Chi-Square	DF	Significance
-2 log likelihood	7260.873	12613	.0000
Model chi-square	967.419	6	.0000
Improvement	967.419	6	.0000
Goodness of fit	16656.678	12613	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1177	.0181	42.3795	1	.0000	.0701	1.1249
Mothers' Ed	.1204	.0192	39.5122	1	.0000	.0675	1.1279
Income	.1176	.0159	54.9827	1	.0000	.0802	1.1247
Urban	.9936	.0677	215.6211	1	.0000	.1611	2.7010
Afro-Brazilian	-.1530	.0673	5.1748	1	.0229	-.0196	.8581
Asian	.1220	.3313	.1357	1	.7126	.0000	1.1298
Constant	.4335	.0703	38.0297	1	.0000		

Age 12

	Chi-Square	DF	Significance
-2 log likelihood	9429.900	12795	.0000
Model chi-square	1431.302	6	.0000
Improvement	1431.302	6	.0000
Goodness of fit	19529.348	12795	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.0992	.0152	42.6702	1	.0000	.0612	1.1043
Mothers' Ed	.1209	.0630	55.2613	1	.0000	.0700	1.1286
Income	.1354	.0350	100.4199	1	.0000	.0952	1.1450
Urban	1.0919	.0586	347.2457	1	.0000	.1783	2.9800
Afro-Brazilian	.0716	.0591	1.4675	1	.2257	.0000	1.0742
Asian	.8915	.3786	5.5432	1	.0186	.0181	2.4387
Constant	-.2162	.0621	12.1118	1	.0005		

Age 13

	Chi-Square	DF	Significance
-2 log likelihood	10715.350	12435	.0000
Model chi-square	1833.625	6	.0000
Improvement	1833.625	6	.0000
Goodness of fit	16299.478	12435	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1253	.0136	85.1108	1	.0000	.0814	1.1335
Mothers' Ed	.1320	.0144	84.2709	1	.0000	.0810	1.1411
Income	.0932	.0103	81.7693	1	.0000	.0797	1.0977
Urban	1.2146	.0580	439.1935	1	.0000	.1867	3.3690
Afro-Brazilian	-.1491	.0536	7.7436	1	.0054	-.0214	.8614
Asian	1.0485	.3402	9.4960	1	.0021	.0244	2.8533
Constant	-.6378	.0604	111.5067	1	.0000		

Age 14

	Chi-Square	DF	Significance
-2 log likelihood	12810.458	12800	.0000
Model chi-square	2396.473	6	.0000
Improvement	2396.473	6	.0000
Goodness of fit	19299.507	12800	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1260	.0120	111.0053	1	.0000	.0847	1.1343
Mothers' Ed	.1209	.0128	89.7313	1	.0000	.0760	1.1285
Income	.1167	.0089	173.4523	1	.0000	.1062	1.1238
Urban	1.1110	.0556	398.6568	1	.0000	.1615	3.0372
Afro-Brazilian	-.1900	.0489	15.1170	1	.0001	-.0294	.8270
Asian	1.5917	.3522	20.4185	1	.0000	.0348	4.9121
Constant	-1.1109	.0585	361.0516	1	.0000		

Age 15

	Chi-Square	DF	Significance
-2 log likelihood	14531.148	13174	.0000
Model chi-square	2601.369	6	.0000
Improvement	2601.369	6	.0000
Goodness of fit	16809.739	13174	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.1251	.0107	137.9042	1	.0000	.0891	1.1333
Mothers' Ed	.1301	.0114	130.6135	1	.0000	.0866	1.1390
Income	.0844	.0069	148.8979	1	.0000	.0926	1.0881
Urban	1.0160	.0583	303.8221	1	.0000	.1327	2.7622
Afro-Brazilian	-.1866	.0463	16.2771	1	.0001	-.0289	.8297
Asian	1.7447	.2813	38.4669	1	.0000	.0461	5.7239
Constant	-1.3688	.0597	524.9518	1	.0000		

Age 16

	Chi-Square	DF	Significance
-2 log likelihood	14351.446	12146	.0000
Model chi-square	2312.898	6	.0000
Improvement	2312.898	6	.0000
Goodness of fit	13264.903	12146	.0000

Independent Variable	B	S.E.	Wald	DF	Sig.	R	Exp (B)
Fathers' Ed	.0897	.0098	83.8971	1	.0000	.0701	1.0938
Mothers' Ed	.1294	.0110	139.6501	1	.0000	.0909	1.1382
Income	.0521	.0056	112.8330	1	.0000	.0816	1.0609
Urban	1.0506	.0632	276.6914	1	.0000	.1284	2.8594
Afro-Brazilian	-.3858	.0480	64.5792	1	.0000	-.0613	.6799
Asian	1.1646	.2036	32.7036	1	.0000	.0429	3.2046
Constant	-1.5717	.0630	621.6624	1	.0000		

Note: B = the regression coefficients of independent variables

S.E. = the standard error of regression coefficients

Wald = the Wald statistics

DF = degrees of freedom

Sig. = the significance level

R = the R statistics

Exp (B) = the odds ratio

APPENDIX D
1980 BRAZILIAN CENSUS OCCUPATIONAL CATEGORIES

Occupational Category	Subcategory	Code
Management/ Administrative	Contractors, Employers	1-13
	Administrators	20-40
Professional/ Technical	Technicians	50-52
	Professionals (e.g., engineers, architects, chemists, physicians, professors)	101-205
	Lawyers, Clergy, Writers, Artists	211-293
	Supervisors, Technicians in Mineral Extraction, Transportation, Textile, Power, Water industries	401-406
	Pilots, Commanders, Navigators, Captains	711-722
	Transpiration Inspectors	761
	Professional Athletes	831-834
Clerical	Office Workers	53-65
	Cashiers	602-605
	Commerce Workers	631-646
	Clerks	741
Transformative	Mechanics, Metal Workers	411-431
	Textile, Related Workers	441-479
	Woodworkers	481-490
	Electricians	491-499
	Construction Workers	511-521
	Food, Beverage Workers	531-545
	Graphic Industry Workers, Ceramic, Glass Workers, Other Manufacturing Worker	551-589

Transportation/ Communications	Maritime Transportation	723-732
	Railroad Workers	742-753
	Railroad Construction Workers	762
	Airline Workers	771-776
Unskilled/ Personal Service	Agricultural Workers	301-391
	Sales Clerks	601
	Street Vendors	611-621
	Service Workers	801
	Domestic Workers, Other Service Workers	805-826
	Doormen, Elevator Operators, Building Security Workers, Custodians	841-845

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